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Formal Gardens.

TO write about gardens, and formal gardens in particular, is no mere taste of to-day, whatever one might think from the number of books on the subject recently published. Lovers of gardens have always found the subject one on which it is pleasant to write and easy to be eloquent; besides the excitement of recommending one's own views and condemning those of others (and each garden-fancier has his own predilections), the subject introduces so many images of things that are pleasant and picturesque to dwell upon. Two or three years ago Mr. Sieveking published a collection of citations on gardens from authors of all ages, and it is curious how very modern some of the very old ones seem, though the old writers do not distinguish the subject as that of "formal" gardens, because in the view of most garden-lovers of all times all gardens were formal; the garden being regarded as essentially an artificial pleasaunce, not merely a strip of nature captured and railed in. Mr. Sieveking's extracts commence with ancient Egypt, and the plan of an Egyptian garden which, with a difference of drawing, might very easily be translated into a Renaissance garden, with its rectangular ponds symmetrically placed, its central lawn and its regular rows of clipped trees. Pliny's description of his garden suggests again something very like a modern formal garden, even in its conceits. "In the front of the portico is a sort of terrace, embellished with various figures and bounded with a box hedge, from whence you descend by an easy slope, adorned with the representation of divers animals in box, answering alternately to each other, into a lawn; . . . this is surrounded by a walk enclosed with evergreens, shaped into a variety of forms. Beyond it is the *gestatio*, laid out in the form of a circus, ornamented in the middle with box cut in numberless different figures." After mentioning that the whole is fenced in by a wall covered by box, he adds—"on the outside of the wall lies a meadow that owes as many beauties to nature, as all I have been describing within does to art;" exactly what we have been reading in recent essays in regard to the contrast between the artificial beauty within the garden fence and the natural beauty outside it. The one can be made by the art of man, the other cannot; and hence all the fallacy of the so-called "landscape gardening," the endeavour to artificially create the kind of charm which only belongs to the unordered working of nature; a false form of art which is eternally doomed to failure.

As we turn over Mr. Sieveking's extracts, we come from time to time on the opposite opinion. The reaction seems to appear first in France, for in the early part of the eighteenth century we find Huet, under the head of "natural beauties preferable to artistic ones," satirising the taste for regular parterres; "a fountain issuing in great cascades from the foot of a rock, will not please the people at court as much as a jet of fœtid and muddy water drawn up at enormous cost from a frogmarsh": a rhetorical way of putting things which is hardly quite fair. The complaint is a curious one to come from the country which made Versailles. From another quotation, however, it appears that he quarrels rather with the people who adopted parterres and nothing else; for he observes that Le Nôtre, though he did adopt the Italian method (the formal parterres) to the King's gardens, "added covered alleys, shaped woods, trees of lofty trunk, palisades, and green shades." By the expression which Mr. Sieveking translates "shaped woods" (we have not the original by us) he probably meant not clipped trees, but woods planted within formal lines, like the radiating avenues at Hampton Court. "The majority of private persons" he goes on, "possessing neither sufficient ground, nor sufficient means to give their gardens all these ornaments, and keep them up, have only adopted its parterres, which require little time and expense, but in which walking is out of the question throughout the day, and in which ladies, regardful of their complexion, would only venture to appear after sunset." There is some truth in this, in spite of one's recollection of the solemn promenade of Louis XIV. and his Court round the *bassins* at Versailles at four in the afternoon, as depicted by M. Gérôme. The full beauty of the formal garden is not brought out but by its contrast with the surrounding freedom of nature; but the makers of such gardens may have this effect without possessing a vast domain, if only they have a contrasting scenery in existence and in view from their garden. Huet's objection evidently was that there would be no part of the private garden affording shade; an objection more serious in France than in England, where we seldom have more sun than we can very well do with in a garden.

A little later than Huet comes Batty Langley, in full revolt against the formal garden, in criticisms in which some truth is interspersed. "How," he asks, "can any person make a good design for a garden, whose situation they never saw?" a remark which seems to imply that there were persons who drew out gardens on paper without knowing the site; and as to the fallacy of such a proceeding Batty Langley is quite right. "To draw a beautiful regular draught," he proceeds, "is not to the purpose; for although it makes a handsome figure on the paper, yet it has quite a different effect when executed on the ground." This may or may not be the case, according to circumstances and to the nature of the "draught"; a point to which we shall have to recur. Some of Langley's further precepts are worth quoting: *ex. gr.*

"GENERAL DIRECTIONS, &c.

I. That the grand front of a building lie open upon an elegant lawn or plain of grass, adorned with beautiful statues (of which hereafter in their place), terminated on its sides with open groves.

II. That grand avenues be planted from such large open plains, with a breadth proportionable to the building, as well as to its length of view.

III. That views in gardens be as extensive as possible.

IV. That such walks, whose views cannot be extended, terminate in woods, forests, misshapen rocks, strange precipices, mountains, old ruins, grand buildings, &c.

V. That no regular evergreens, &c., be planted in any part of an open plain or parterre.

VI. That no borders be made, or scroll work cut, in any such lawn or plain parterre; for the grandeur of those beautiful carpets consists in their native plainness.

VII. That all gardens be grand, beautiful, and natural."

This last is indeed a counsel of perfection, expressed with a commendable force and brevity—could one but know how to arrive at it. But what were Langley's ideas as to the meaning of the word "natural" in gardens becomes rather a puzzle in the light of some of the succeeding recommendations:—

"X. That hills and dales, of easy ascents, be made by art, where Nature has not performed that work before."

It would seem from this that the imitation of things which might have been there naturally, but are not, is with Langley the same thing as "natural." But precept XIV. is much worse:—

"That the walks leading up the slope of a mount have their breadth contracted at the top, full one half part; and if that contracted part be enclosed on the sides with a hedge whose leaves are of a light green" [aërial perspective!], "'twill seemingly add a great addition to the length of the walk, when viewed from the other end."

No doubt; but how when it is viewed from the mount, regarding the perspective the wrong way? This is perhaps the most original way of rendering a garden "grand, beautiful, and natural" that was ever suggested. And he goes on, in the next precept, to extend the treatment to "all walks whose lengths are short, and lead away from any point of view," which should always be made narrower at the further end; "for by the inclination of their sides, they appear to be of a much greater length than they really are." Such precepts, one must suppose, were intended for the esoteric audience of the landscape gardening trade, and not for the general reader. Surely in vain the net is spread in the sight of any bird.

What was called in the eighteenth century the "English taste" in gardens, which was in reality only a temporary aberration from the old English taste, spread into France, and the "jardin anglais" became for a time the fashion there, according to which fashion was laid out for Marie Antoinette the land around the Petit Trianon; the only poor piece of work in the domain of Versailles. But Versailles has held its own, and the modern French mind has recognised its greatness. This is how Théophile Gautier speaks of it, after referring to the manner in which Victor Hugo and De Musset, "in the days of our romanticism," had belittled Versailles:

"We were wrong; this garden was quite the garden of this château, and there was a marvellous harmony in this collection of regular forms, in which the life of the period could develop at ease its majestic and rather sluggish evolutions. The result is an impression of grandeur, symmetry, and beauty, which no one can resist. Versailles ever remains unrivalled in the world; it is the supreme formula of a complete art, and the expression, at its highest power, of a [civilisation arrived at its complete expansion."

Unhappily, it is not now kept up as it should be. It would surely be worth while for the present French Government, which has made it into a public park, to spend money a little more liberally in keeping up to its pristine beauty and completeness such a grand and unique creation in artistic gardening.*

* See, on this subject, an article on "Versailles under the Republic," in the *Builder* of August 26, 1899.

After the various books which have been recently written on the subject, with illustrations on a small and inadequate scale, a great illustrative work, like that just completed by Mr. Inigo Triggs,* was just what was wanted to complete the representation of the subject. We have had literary matter enough upon formal gardens; we have now a fine collection of illustrations on a tolerably large scale. As his main object was illustration, Mr. Triggs has not burdened his collection with much text, the writing being confined to the descriptions of the places illustrated in the plates, and a short "Historical Note" by way of introduction. This is a good and well-written summary of the development and the changes in taste in English gardening since the time when we have any data to go upon, which is not from a very early period, for our ideas as to the forms of mediæval gardening are a good deal conjectural, depending mainly on the conventional representations of illuminated MSS. Mr. Triggs points out, very justly, the true meaning and scope of Bacon's celebrated essay "Of Gardens"—that it should be read as an attempt to improve the national taste, not as an exact picture of the formal garden of his day; indeed, Bacon was the last man to accept anything on trust or merely because it was the fashion of the day. It is noticeable that Bacon indicates the real origin and use of the "Mount," which became so common a feature in Elizabethan gardens; it was to see over the enclosure into the country: "At the end of both the side grounds I would have a mount of some pretty height, leaving the wall of the enclosure breast high, to look abroad into the fields." A garden was a place of privacy and retirement, hence the enclosing wall was an important feature; still, it was well to have a vantage ground whence you could see the neighbouring country if you wished. With the eighteenth century landscape gardeners this view of the country was provided by the unhappy invention of the sunk ditch and wall or "ha-ha," which removed the visible enclosure and with it all sense of retirement and seclusion. We notice also the author's remark at the conclusion of the essay, that the reaction against the formal garden by the landscape-gardening school, however it may be regretted, "was largely owing to the excesses and abuses which had crept in during the early part of the eighteenth century," in the designing of elaborate parterres and conventional scrolls, often plotted out in coloured sands and box edgings; "these are but toys," as Bacon observes. An old plate of the garden in front of the terrace at Hampton Court shows it all laid out in these elaborate scroll patterns where the lawn now is. A semicircle of small fountains round the circumference is a charming feature, which we might well wish to have back; but in other respects the present lawn is far preferable to the old patterns. The taste for clipping trees into artificial shapes was also carried to extravagant lengths, and is, to adopt Bacon's words, "nothing to the true pleasure of a garden"; and though we would have such old clipped gardens as Levens Hall and Heslington Hall kept up, as interesting historic examples, we should have no hesitation in saying that in itself, the topiary garden at Heslington, as shown on plate 48 of the book, is very ugly, and that at Levens equally so. The hornbeam hedge at Levens is another matter; there is a kind of monumental grandeur about that, enhanced by one's conviction of the time it must have taken to bring it to perfection, giving the idea of ancestral dignity to the site. We are glad to notice that Mr. Triggs gives the correct meaning of "pleached"—viz.: close-knit or interwoven; several modern writers have jumped to the conclusion that it meant "clipped," because the term was found in connection with these clipped hedges; but they were equally "pleached" whether they were clipped or not; Tennyson uses the word in the true sense.*

The author half suggests that for the expression "formal garden," which to some ears carries an idea of disapproval, we might substitute "architectural garden," which would indeed be more suitable, since such gardens are really designed on architectural principles and in order to harmonise with the architecture of the mansion. To one point in his introduction we must object; we cannot allow that Repton is to be classed with such a man as "Capability Brown," and referred to as a "Vandal." Repton's faults in taste were those of his day, but he was no commonplace man; in much of his written criticism he shows the feeling and instinct of an artist, about architecture as well as about landscape; he lived at an unfortunate period, but his merits were his own, and he was worth a great many Capability Browns.

The author gives Montacute as the first garden plan in his collection; this however is hardly a typical plan as regards the arrangement of house and garden, as the gardens are on each side and not on either of the fronts of the house, nor are they centralised so as to form an architectural whole in combination with it. The house, on a plan in H form, has been turned round; that is, the old entrance forecourt is now a garden, and the entrance is by an avenue to the opposite side of the house. We quite agree that there is a remarkable charm about Montacute, with its higher garden on one side and its lower one, down a wide flight of stone steps, on the other; but this arrangement does not realise the stateliness and grandeur possible with an axial garden plan. The plans of Longford and Wilton, with the axial garden stretching from the front of the house, with parterres on each side of the central walk, and each terminating in a semicircular boundary with a vista of a long planted walk beyond, realise more what may be called the architectural idea of a garden in connexion with the mansion. Wilton is preferable in one point—the interruption of the central alley half-way by a fountain; a long unbroken central walk is not so effective. Neither of these very symmetrical plans would have full effect, however, without a richer and wilder natural scenery beyond the boundary to contrast with and emphasise the highly artificial character of the garden; and in the case of Longford the view shows that this condition is completely fulfilled, the heavy irregular masses of the trees beyond coming in with excellent though perfectly unstudied effect. As an example from the book, however, we have preferred to give

* "Formal Gardens in England and Scotland." By H. Inigo Triggs. London: B. T. Batsford." 1902.

* See the poem—"A Dirge."

the plan of the gardens of Hampton Court, Hereford, as formerly existing (see plate); both because of its interest as representing an old plan now destroyed, and also as being, in its elaborate arrangement, exceedingly characteristic of the period (early eighteenth century). The author notes the fact that the avenue of approach leads right into the forecourt, round which it was possible to drive (or ride) up to the door, "this arrangement differing from the earlier type, when it was customary to traverse at least one court on foot before arriving at the front door." So we read in Bacon's Essay "On Building" that you must have three courts of approach before you come to the front—a green court, then a court also green, but "garnished" with little turrets or other embellishments on the wall; and a third court enclosed with columned terraces or galleries. A stately approach indeed, belonging to a time when stateliness rather than convenience was studied in the mansion. To return to the plan of Old Hampton Court, this seems to illustrate a certain amount of truth in Batty Langley's criticism before quoted, that a "draught" may look very well on paper but fail of its effect in execution. The double garden with the little square ponds at intervals, for instance, looks like a kind of ornament on paper, but would hardly have that effect in reality, and the little ponds would probably illustrate the censure of Bacon, that "Pools mar all, and make the garden unwholesome, and full of flies and frogs." One can fancy how green and stagnant those little ponds would have been, which look so nice on paper; unless there were arrangements made, according to Bacon's further (and perfectly sensible) suggestion, that such ponds should always have a flow of water through them which is hardly likely to have been the case here. Eight fountains similarly placed would have been charming, but automatic pumping machines to secure a head of water were not available in those days. The long canal may have been a fine feature. But as a whole this plan is to some extent an example of the weakness of formal gardening; it is a paper design, very clever and ingenious as such, but which, for actual effect, is over-elaborated and cut up into too many small portions, so that there could have been little effect from it as a whole.

Among the other old plans shown in Mr. Triggs's plates, that of Fairford is a good example of the garden axially arranged with the house, and treated somewhat in the same way as Longford, with a semicircular boundary at the end opposite the house; it has the centre fountain which Longford wants. Another old plan, that of Lowther Hall, is an exceedingly fine one, which not only looks well on paper, but must have had a fine effect in execution; on a small scale, it has something of the combination of symmetrical and axial centre with wooded walks entered at an angle, which makes so much of the charm of Versailles; and it is not too much broken up into small parts to allow of a fine *coup d'œil* from the house. The only real mistake in it is the in-and-out symmetrical outline of the bowling-green; for an elaborated outline of retiring angles and of segments of circles &c., only shows its shape on paper; on the ground it is lost or distorted by perspective. Another kind of effect is shown in the plan and view of the existing terrace garden at Bowood, where the formal garden is arranged in two terraces parallel with the long low Italian front of the mansion. The arrangement of the garden in this case exactly suits the special design and proportion of the front of the building, the whole appearing a part of the same design.

Among all the plates in the collection, however, there is perhaps none which gives so fine an idea of the stately effect possible with a large and finely-designed formal garden as that of the garden at Trentham Hall, laid out by Sir Charles Barry, of which we have given a reproduction. The effect of this large and spacious ornamental garden, with the lake and the irregular lines of the wooded hills beyond, is magnificent; and it may be observed that Barry has avoided the mistake made in some of the older symmetrical gardens, of having one continuous and comparatively narrow alley down the centre; by interrupting the centre with a large circle he has given a far greater breadth and dignity to the whole. And here we may take occasion also to observe, in reference to the distinction before referred to between ornamental forms on paper and the same forms on the ground, that the circle (or semicircle) is the one form of the kind which can be depended on to look well in execution. More elaborate and broken-up forms lose their decorative effect when laid out on the ground; but the eye can always take in and follow the line of a circle in perspective, and see it for what it is; and its effect in contrasting with straight lines can always be depended upon. The ellipse will not do, as from some points of view it will look like a badly laid-out circle; but the circle will always define itself clearly in perspective.

The Scottish gardens illustrated in the collection are for the most part less extensive and stately than the English ones; in Scotland the wealth necessary for the creation and keeping up of such gardens was for the most part wanting. There are the celebrated examples of Drumlanrig Castle in Dumfriesshire, and Drummond Castle in Perthshire; the view of the former shows an effective contrast between the formal garden and the wild forest beyond. Among the smaller examples Stobhall (Perthshire), with its plain, almost barn-like house, and its garden punctuated at the angles of the lawns with cut trees, is interesting and characteristic; so are the garden house and fishgates from Kinross, with their naïve stone details.

The gates and gate-piers which give access to sumptuous gardens have often been an occasion for fine and impressive design. We reproduce the illustration of those of Drayton Park, Northants, which are exceptionally good, especially in the bold modelling of the eagles on the principal piers. In modern times gate-piers are generally treated with much more timidity and reserve than in ancient work; the opportunity for this kind of effect is not unfrequently presented, but the modern gate-pier is too often a starved-looking concern in comparison with the bold and massive treatment of former days; possibly the blighting influence of the contract system has shorn them of their ancient glories.

On the other hand the garden houses and dovecots illustrated in this collection are poor enough, and though historically interesting, hardly worth illustrating as examples. The illustrations of "topiary work" (cut trees) are characteristic and not extravagant; probably the more *outré* examples described in old works, in which groups of figures are represented, have all perished long ago; a more reasonable taste has not thought it worth while to keep them up. Those which are figured by Mr. Triggs are merely somewhat fanciful forms with no special meaning; things that are worth keeping up where they exist, as curiosities of the taste of another time; but on the whole the less of them there is in a modern garden the better. They represent a false and rather frivolous taste. Of the two plates of lead cisterns—things which do not really belong to gardening—we have reproduced one, because it shows how much trouble and cost it was then thought worth while to go to in decorating these objects of practical use, now generally hidden out of sight and left in the native plainness of the material (where it is used at all). Nevertheless, we do not regard these as examples for imitation; they are too stiff and formal for a material so ductile; a modern artistic lead-worker might produce something far more characteristic and more in keeping with the material; but they serve to remind us how much may be done with a lead cistern.

The whole book does the greatest credit both to author and publisher, and will probably for a long time to come remain the leading illustrative work on the subject of Formal Gardens.

NOTES.

Vauxhall Bridge and the L.C.C.

PROBABLY no one who has followed the history of the subject of Vauxhall Bridge will be in the least surprised that the London County Council has again refused to listen to any of the criticisms that have been passed on their method of dealing with new bridges. They are totally ignorant of what is meant by the architectural treatment of a bridge, and are apparently resolved to go their own way in the expenditure of public money out of sheer obstinacy. There can be no other reason for their action. They have only been asked to do what the Paris City Council invariably do in such cases—to appoint an architect of repute to design the decorative portion of the bridge. It could do them no possible harm to accede to so reasonable a request; it would be to their credit, in fact; but they prefer their own Philistinism. Mr. Ward, the ex-Chairman of the Bridges Committee, repeated again the statement which engineers always try to work in, that the Tower Bridge was designed by an architect and engineer, and that no structure had been more criticised by architects. The first part of the statement has been contradicted over and over again, as Mr. Ward ought to know perfectly well; the engineer got a Gothic draughtsman to do the details, who worked under him and whose name never appeared. That is *not* what is wanted of the London County Council, and they know that it is not. What is wanted is that they should employ an eminent artist to design what ought to be artistic work; and this is what they doggedly refuse to do. We do not think, however, that they have heard the last of the matter yet. It is not only a question of Vauxhall Bridge, of course, but of the proper designing of all future Thames bridges.

Nuisances and Urban Authorities.

A CONSIDERABLE number of cases dealing with the respective rights of house and land owners and the powers and duties of the Local Authorities have come before the Courts in the past four weeks, and a question of some importance was raised in the case of Leyman *v.* Hessle Urban District Council.* The plaintiff applied for a mandatory injunction for the removal of a urinal which the Urban Council, purporting to act under Section 39 of the Public Health Act, 1875 (which gives powers for the erection of such conveniences "in proper and convenient" situations), had erected on the main road between Hull and Hessle, and within 12 ft. to 15 ft. of the plaintiff's front gate. Mr. Justice Joyce, on the facts of the case, held that the urinal constituted a nuisance, as it materially interfered with the ordinary comfort and convenience of the plaintiff in the enjoyment of his property, and granted the injunction without having to give any decision on the powers of the District Council under the section of the Act; but as this question is of considerable interest to owners of property, it may be useful to point out that it has already been held that this section does not authorise the creation of a nuisance, but in that respect leaves the Urban Authorities in the same position as a private individual (Vernon *v.* Vestry of St. James, 18 C.D. 449). When, however, the erection does not constitute a nuisance—as, for instance, where it is some distance away (and in one case 250 ft. was held a sufficient distance not to render a urinal a nuisance), or where it is only in course of construction—then the section has to be considered, and the effect of the cases seems to be that where no improper motive has been proved, and where the Authority has properly exercised a discretion, the Courts will not interfere, and thus, in the absence of nuisance, the householder seems to be without remedy, as it has also been decided that in such cases neither has he any right to compensation under Section 308. In some of the older cases there are expressions which seemed to indicate that the discretion of the Authority need only be exercised as to where the public need can be conveniently satisfied; but in the recent case of Pethick *v.* Plymouth Corporation Mr. Justice Chitty expressly laid it down that the surrounding land and its owners and occupiers were also to be taken into consideration; so in flagrant cases, it appears, the Courts would interfere on the ground that the Local Authority had failed to exercise its discretion properly.

Liability of Road Authorities.

IN the case of Bull *v.* Mayor, &c., of Shoreditch the Court of Appeal had a question of considerable difficulty to decide on the findings of a jury after a second trial in the Courts below. The defendants were sued in their capacity of road and sewer authority by the plaintiff, who had suffered personal injuries through being overturned in a hansom cab. The defendants had opened a certain road to lay down a sewer, and afterwards had filled up the trench, but it had subsequently sunk. The cabman, finding the right side of the road unfit, had driven to the off side, and there run over a heap of gravel, which overturned the cab. The jury found the trench to have been dangerous, and that the cabman was justified in going to the off side; that the road had been properly finished, but the rain had caused it to sink; and that the heap of gravel which caused the accident had not been placed where it had been by the defendants' servants or with their permission. On these findings, the Judge, at the second trial, had given judgment for the defendants, and the plaintiff now appealed. The defendants contended that there was no misfeasance on their part, but only nonfeasance for which no liability attached to them; and secondly, that the heap of gravel having been placed where it was by a wrongdoer, no liability for the accident attached to them. The majority of the Court of Appeal found that the defendants were guilty of misfeasance, as they should have made the road permanently fit and not only temporarily so, and that, although the heap of gravel was not placed where it had been by the defendants themselves, they were fully aware of its position, and as they had failed in their obligation to one of the public to make the road safe, there was a sufficient chain of causation to connect the breach of duty with the ultimate mischief. It is to be observed that the decision might have been different if the defendants had been unaware of the position of the heap of gravel. It is important that the general public should recognise the distinction between cases of "nonfeasance" and "misfeasance" in this connexion. Thus, if gratings or manholes are in proper condition and properly fixed in a road, but owing to the road being improperly kept up they become dangerous, the authorities cannot be made liable, whilst it is otherwise if the grating itself is defective or imperfect. Whether it is desirable that the authorities should, through a dereliction in their duties, be allowed to endanger the public safety in this manner without liability is not now a question for the Courts, but for the Legislature, and we think the sooner this anomaly in the law is removed by legislation the better, as no logical distinction can be traced between the two kinds of negligence.

"Appurtenances" to Detached Villas.

THE case of Webster *v.* Brewis, reported in our last issue, raises an important question for householders in these days of increased building operations, with the consequent diminution of light and air. The defendant held a plot of land on a building estate, which was held subject to a covenant restricting the erection of any buildings on the land other than one or two detached villa residences of a certain value, "with the appurtenances thereto." At the time this land was conveyed to the defendant subject to this covenant made with his predecessor in title, a dwelling-house, coach-house, and stables had been erected upon it. The defendant pulled down the fence between his land and the adjoining plot and erected in its place a building 30 ft. long and 20 ft. high within 8 ft. of his neighbour's windows, which he intended to use for the storage of bicycles, firewood, laundry utensils, &c. The plaintiff then brought this action for breach of the covenant, and for obstructing the light and air, but failed in his action, the court holding this structure to be a reasonable one for the purposes of such a villa, and to be an "appurtenance thereto." It is unfortunate the report is silent as to the value of the villa, but the addition of such an outhouse to a villa already supplied with stables and coach-house seems a serious matter, and one which can hardly have been within the contemplation of the parties to the original contract.

Gates for Moveable Weirs.

AFTER about sixteen years' service the dam in Lake Winnibigoshish, controlling the head waters of the Mississippi River, has been reconstructed. The new structure rests upon the old foundations, and includes two concrete abutments, five concrete piers, five steel "Tainter" gates, and one wooden Parker "bear-trap" gate. The Tainter gates are of steel, sheathed with 3 inches of oak. Each gate has five sets of radial arms securely connected to a steel axle having cast steel trunnions revolving in cast-iron journal boxes bolted to the pier masonry. Concrete counterweights are hung by chains which are fastened to each end of the gate and pass over sheaves supported by steel framework. Hoisting is effected by means of double-purchase winches, and it is quite possible for one man to raise or lower a gate. The "bear-trap" gate situated at one end of the dam is of somewhat singular construction, consisting of three timber leaves, with forged steel hinges, and arranged, as the name implies, after the fashion of a trap. Although this gate is heavily loaded with protecting iron plates and rails, it responds readily to the regulating mechanism, and comes to its final upward position without any jar or jerk. This curious form of gate was originally devised in the year 1819 as a means for the improvement of navigation on the Lehigh River in Pennsylvania, and it is said that the name was given to the gate by the workman then engaged as an answer to curious persons who desired to know what they were making. Since 1819 the bear-trap gate has been considerably improved, and it has been used in various parts of the United States by the United States Engineer Corps and civil engineers.

Cheaper Gas.

ON Monday evening last Professor Lewes delivered the first of a course of four Cantor lectures upon "The Future of Coal Gas and Allied Illuminants" before the Society of Arts. After pointing out that the cost of producing coal gas must tend to increase rather than decrease, owing to the gradual exhaustion of the best beds of gas-making coal, and the consequent rise in prices, the lecturer said that in order to produce a cheaper gas it will be necessary to resort to the use of a cheap diluent. Fuel gas of the Mond or Dowson type must be rejected, because it consists mainly of non-combustible material, which cannot be economically distributed over large areas. Water-gas, however, contains very little incombustible matter, and has double the heating power of fuel gas, and is therefore more serviceable for general distribution. Water gas is produced by the action of steam upon red-hot coke, one of the residuals obtained in the manufacture of coal gas, and can be manufactured on a gasworks at one-third the cost of coal gas. Referring to the poisonous character of carbon monoxide, a constituent of water-gas, Professor Lewes pointed out that this gas is also

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present in coal gas to the extent of about 7 per cent., and that if the proportion of carbon monoxide in the public supply were limited by Act of Parliament to 16 per cent. the risk of poisoning by leakage would not be materially increased. In view of the popular agitation against water-gas, and of the Bill dealing with the subject which has been introduced into Parliament, the discussion of the subject by Professor Lewes is very opportune. A cheap supply of gas has become a matter of great industrial and social importance, for the number of gas engines and other gas-consuming appliances economically employed for industrial purposes throughout the United Kingdom has increased in a very remarkable manner during the last ten years, while to cheap gas we must look as the only practicable substitute for smoke-producing fuel. Many of our competitors on the Continent and in America have for years been supplied with water-gas, and its use in limited proportions in this country should not be prohibited if a commensurate reduction in the price charged for the gas can be obtained.

The Sonning Bridges.

THE Bridges Committee of the Oxfordshire County Council have decided to carry out the original plans of their Surveyor for lattice-girder bridges of 50 ft. span, on iron piers. We fully expected this result, although it was a duty to protest. They have gone far to spoil a beautiful place; but that seems to matter nothing in comparison with the saving of money, which is the sole reason alleged for the action of the Committee.

Messrs. Lawrie's Gallery.

IT is not often that one can find even a small exhibition in which every work is worth attention and the majority are among the finest productions of their authors, but this privilege has been provided for us by the generosity of Sir Cuthbert Quilter in lending his pictures for exhibition in Messrs. Lawrie's Gallery in New Bond-street. Round the walls of the larger room are disposed a group of pictures so fascinating in their varied interest and beauty that it is difficult, having once entered the room, to make up one's mind to leave it. First in the collection comes Turner's extraordinary effort, quite at the end of his career, to rival Titian in his own field, in the painting of "The Departure of Adonis for the Chase." The figure of Venus, needless to say, does not equal the drawing of Titian; but the whole effect of the picture, as a kind of modern echo of the great Renaissance painter, is wonderful in its way; the sky seems as if it had been actually cut out of one of Titian's pictures. Reynolds's "Nymph and Piping Boy," one of his finest efforts in colour and composition, comes next; then an example of David Cox at the highest point of his art—if there is a finer David Cox than "The Skirts of the Forest," we do not know it. This is balanced by a fine Linnell landscape, not quite equal to the Cox in breadth and power of style, but in its own style an interesting contrast to the other. Between these two the "Bella Mano" of Rossetti represents the best of Rossetti's art—somewhat over-rated in our opinion, but impossible to overlook. Romney's "Mrs. Jordan" is followed by Walker's "Bathers," perhaps his most complete and typical work. Millais's "Joan of Arc" is a perfect work in execution, and much finer in expression, as a realisation of the heroine, than seems to be generally recognised — Millais is so entirely free from exaggeration or theatrical effect in these things. Landseer's "Titania and Bottom," not so much admired now as it once was, is a typical example of his *finesse* in execution; Constable's "The Edge of the Wood," a masterly work, is followed by Millais's "Murthly Moss," one of the most beautiful landscapes ever painted — looking more beautiful every time one sees it; and in a small collection like this it can be more fully appreciated than amid the crowd of a large exhibition. The remaining three in the large room are Mr. Herkomer's "Last Muster," perhaps his best work; Mr. Leader's "Parting Day," belonging to the secondary and popular grade of landscape art, but showing the artist at his best; and Mr. Holman Hunt's "Scapegoat," which has compelled the attention of the world by sheer power of painting, in spite of its ugliness and the absurd incongruity of the solemn text on the top of the frame. By the way, how came so conscientious a painter to misrepresent the familiar markings of the moon's surface as he has done in this picture? The smaller room contains some very interesting portraits of the Constable family; John Phillip's last and not quite finished picture; Millais's wonderful portrait of John Bright; and Mr. Riviere's fine and poetically suggestive painting, "The Magician's Doorway." It is a wonderful collection to find in so small a space, and forms a notable exposition of the variety and power of modern English painting.

Mr. McLean's Gallery.

THE collection of water-colour drawings by Mr. Claude Spero —an Italian, we presume, from his name—at Mr. McLean's Gallery in the Haymarket, may be said to be rather of topographical than artistic interest; at least, their artistic interest is not of the highest; the style is mannered and conventional. The drawings from Pompeii and the neighbourhood are, however, of considerable interest and value as representations; the most effective are "Outside the Stabian Gate" and "Evening in the Forum," in both of which Vesuvius plays an important and effective part in the background. Among the "Drawings in Capri and the Neighbourhood" there is a characteristic one of "A Caprean Villa," with its colonnade painted red in the lower portion and climbed over by a vine, and its circular medallions with decorative subjects; and among these and the "Miscellaneous Sketches" are landscapes which are very pretty in effect and carefully finished; but they give one rather too much the impression of drawings suitable for reproduction in chromo-lithography.

HOSPITAL, AUCKLAND RURAL DISTRICT.—On the 20th inst., at a meeting of the Auckland, Shildon, and Wellington Joint Hospital Board, tenders were received for the new hospital to be built at Helmington Row with a capacity of twenty-four beds. The tenders were:—T. Manners, Bishop Auckland, 9,057*l.* 9*s.*; Walton Bros., Crook, 9,060*l.*; W. D. Ayton, Tow Law, 10,280*l.*; W. Hudson, Bishop Auckland, 9,511*l.* 15*s.* 11*d.*; T. & J. White, Newcastle, 10,265*l.*; G. H. Bell, Bishop Auckland, 9,396*l.*; J. C. Nichol, South Shields, 9,440*l.* The second lowest tender, that of Walton Bros., was accepted. The estimate of the architect, Mr. W. Perkin, Bishop Auckland, was 9,005*l.*

THE ARCHITECTURAL ASSOCIATION.

AN ordinary fortnightly meeting of the Architectural Association was held on Friday evening, last week, in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. H. T. Hare, President, occupying the chair.

The minutes of the last meeting having been read and confirmed, and some nominations having been read,

The following gentlemen were elected members:—Messrs. L. L. Jeeves, C. D. Power, G. R. Bryce, H. Rigg, B. G. Gwyther, J. Swanbrick, G. A. Soames, and A. C. Bossom. The following gentlemen were also reinstated, *i.e.*, Messrs. P. M. Horder and H. W. Roberts.

Mr. R. S. Balfour, Hon. Secretary, announced the following donations to the library, *i.e.*, a parcel of books, comprising some volumes of the Royal Institute of British Architects' Transactions, *Builders*, &c., presented by Mr. Andrew Oliver; "The Life, Work, and Influence of Sir W. Chambers," presented by Mr. J. Maclaren Ross; "The Life, Work, and Influence of Sir John Vanbrugh," presented by Mr. G. H. Lovegrove; and "Lettering in Ornament," by Mr. Lewis F. Day, presented Mr. B. T. Batsford.

A vote of thanks was accorded to the donors.

Mr. Cecil C. Brewer then read the following paper on "Sanatoria":—

The principle which seems to have actuated your Committee in their invitation to me to speak to-night on "Sanatoria for Consumptives," seems to have been this, that if you invite some one who but half knows his subject you are likely to get a livelier discussion than if you put up your expert, and by so doing frighten away other speakers. I am perfectly conscious that there are others here to-night much more competent to speak than I, but I was assured by the Secretary that none were willing to take up the subject, and as it is one on which I am most anxious to obtain information, I consented to act as a bait to these gentlemen, and I can only hope that they will be drawn by my remarks to give to the meeting some of the knowledge they undoubtedly possess.

I feel, too, that I am speaking at a not very opportune moment. I had hoped that before this date something would have been known as to the outcome of the King's Sanatorium Competition. That is to say, something further than the mere awards—that the essays and plans would have been published, and that we should have had a chance of seeing and discussing the plans accompanying the prize essays on the ideal sanatorium, as judged by the leading medical specialists. However, these have not been published, and nothing is as yet publicly known as to the form the building will ultimately take.

Let it be understood that I shall confine myself to sanatoria for the treatment of consumptives by the so-called open air, or "Nordrach," system, of which the two main features are open air and abundant feeding, though Dr. Walker will tell you that it means a great deal more than this. I shall speak first of these sanatoria generally, mentioning some of the most prominent of those already built, both for paying and non-paying patients, and shall then go on, if there is time, to discuss some details of construction and fittings. I shall not tell you anything about sites, aspect, climate. Those are all more medical than architectural points, and I shall leave them to Dr. Walker, who is to speak after me, and who will, I hope, give you a description of the life of a sanatorium patient and of the essential points of the treatment, and will, from her very great practical experience of the treatment, answer any questions you may put, and give reasons for many of the things that I shall state as axioms.

Existing sanatoria as to their plans may roughly be divided into two classes: Firstly, those built on a concentrated plan; and, secondly, those on the cottage, or block system; that is to say, they vary from the large hotel-like buildings, such as Falkenstein and Hohenhonnef, in Germany, both having five floors, to Nordrach and the American Cottage Sanatoria, with quite small blocks, having two floors at most. In comparing the two systems, it must be remembered that Nordrach, perhaps the most successful of all these sanatoria, is on the cottage plan, and there can be no doubt that, from a purely medical point of view, this plan is best; but the disadvantages in working are many and obvious, both as regards convenience and economy.

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The medical requirements are extremely simple. Every part of the building must be:

(i.) Well ventilated.

(ii.) Free from dust and easily cleansed.

(iii.) Patients' rooms, in addition to abundant fresh air, must have as much sunlight as possible, and must be protected from cold winds.

(iv.) The building must be as sound proof as practicable.

The perfect sanatorium, therefore, will be the one that fulfils these requirements, and at the same time is convenient of management and supervision, provides reasonable comfort for patients in all weathers, and has not too much the appearance of a hospital or barrack, but which must not, on the other hand, degenerate into the hotel or hydropathic establishment.

At Nordrach, which is rightly called a colony, the various buildings are scattered throughout the village at some considerable distance apart; some of them have been especially built, but others, such as the administration and staff offices and some patients' blocks, are merely old buildings converted, and I think it is generally admitted that the success of this sanatoria has been due to management, strict régime, and the personal magnetism and enthusiasm of Dr. Walther, the founder, rather than to its buildings or site.

Nevertheless, some recent sanatoria in this country have been built closely following the Nordrach plan. One lately built, which I have seen, has its dining-room, kitchen, and staff offices on one side of a little valley, and the patients' rooms on the other, at least 200 yards away, and with no other means of communication between them than an uncovered and unsheltered path. Now, considering that in any sanatorium a certain proportion of the patients must be confined to bed, and must at the same time be provided with substantial and appetising meals, such a plan is surely absurd, and I can see no reason why, because a sanatorium in the Black Forest has succeeded, in spite of such an arrangement, that we should handicap ourselves with it in England—and the cottage system seems unsuitable to our climate—but would rather suggest the large building spread over as much ground as possible, and so arranged that the parts may be easily isolated.

I propose now to show you the plans of some sanatoria built in Germany and elsewhere on the concentrated plan, discussing them as they are upon the screen.

1. Falkenstein.—I have placed this first, as it was one of the earliest, and now is, perhaps, the best-known, German sanatoria, having been much advertised lately through the visit of our King, and it happens to be one which I have myself seen. This building, which was erected in 1876, accommodates 112 paying patients on five floors, of which I have only been able to obtain the main or ground-floor plan. There is a basement below this occupied by very large stores, bathrooms, and offices, with a verandah in front, and above are three floors of patients' rooms. The lay-out is ingenious, but it is doubtful whether the central recess on the plan is an advantage, for the rooms in the centre are somewhat deprived of sun. The building generally is too much of the hotel type, and the number of sitting-rooms is altogether excessive and harmful; they are difficult to supervise, and are a temptation to patients to spend too much time indoors; it being now generally admitted that patients when indoors should be as much as possible in their own rooms, which can be thoroughly ventilated, and where talking and forbidden amusements are not indulged in. There are also too many mouldings, decorations, curtains, and other dust-traps about the building. The water-closets are not detached from the main building, and the ordinary baths are poor, except for the douch, &c., which are much used, and which are situated in the basement under the staffrooms, and here the bathing is done under medical supervision, and the taps are placed outside the rooms. The dining-room, the one really important sitting-room in a sanatorium, though a fine room, is not well placed, having only north and east aspect. The patients' rooms are 13 ft. to 14 ft. high, which is quite unnecessary, and even inconvenient, 8 ft. 6 in. to 9 ft. having been found in practice to be quite an efficient and convenient height. But to take the chief objection to this plan last, the patients' rooms are placed on both sides of corridors, and it has become an axiom that patients' rooms should only be placed on one (and that, of course, the south) side of a corridor; in other words, that your patients' block must only be one room thick. This has been realised in Germany now as well as in England, as you will see in the plans of more recent German buildings which I shall show immediately.

Let me first show Hohenhonnef. This closely resembles the Falkenstein plan, but is, I think, an improvement on it, as it should be, having been built sixteen years later. The wings here are shorter, so that the centre is not so shut off from the sun. The dining-room with east and west aspects and the complete blow through is better; and on the upper or patients' floor, the central portion is only one room thick, and the water-closets are partially isolated. But we get the same excessive number of sitting-rooms and the same number of stories. In both these sanatoria, which are for paying patients, there are bedrooms for visitors and friends of patients, and these together with the number of reception rooms lead one to suppose that the life more nearly approaches to that in a large hotel than would be allowed at Nordrach, and certainly the general aspect of Falkenstein when I saw it three years ago was very different to that of the newer and stricter English sanatoria.

3. Ruppertshain.—This sanatorium for the poorer classes, built about six miles from Falkenstein in 1895, is, as regards plan and arrangement, to a great improvement on the former. The building was originally planned to accommodate men in the west, and women in the east wing, and was so being used when I visited it; but a new sanatorium for women was then being built close by, and the whole of the old building was to be given up to men. The arc form is distinctly good, although the thickening of the ends seems a mistake, and overshadows the rooms next to them. Here you will notice that the room and corridor plan has been adopted, so that by the use of fanlights over doors an excellent blow through may be obtained. You will notice that a dining-room and a dayroom are the only sitting-rooms provided, but that there are ample open-air galleries. The basement contains, beside the day-rooms, douche-room, stores, cellars, heating chambers, &c.

On the first and second floors the dining-rooms occupy the centre, one being for men, the other for women, and there are small pantries off them—a certain amount of the light housework being done by patients, both men and women. The bedrooms are arranged for one, three, and five beds respectively, but at the time of my visit they were being used for larger numbers than these. This dormitory arrangement can only be tolerated on the ground of expense, and possibly in the case of very poor patients who, Dr. Walker tells me, do not always appreciate the luxury of a single room. But any one who has slept for many nights in the next room even to a coughing consumptive patient will realise how essential separate rooms are.

Here the sanitary arrangements are fairly isolated, and for the most part good, except for the earth closets, which are of a strange and wondrous pattern—that is to say, they are on the soil-pipe plan—this pipe being a 9-in. glazed stoneware one, and as it bends and twists, and is jointed to connect to the closet below, the result may be imagined, and I could well believe the doctor when he assured me that they must shortly be abolished and water-closets put in.

The two small buildings on the extreme west of the plan, are objectionable, being pigstyes, and comfortably placed between the open air gallery and the scullery. In spite of these objections the buildings are well laid out and built, and as there is no ornament, and reasonable precautions are taken to avoid the lodgment of dust, they struck me as in every way better than those at the parent institution, Falkenstein.

Alland.—This sanatorium, which was opened in 1897, is thirty miles from Vienna, and at present accommodates 118 patients, but the grounds, farm, laundry, lighting, laboratory, and other blocks are sufficiently large for a sanatorium for 300, and new patients' blocks will shortly be built to bring the number to this total. This sanatorium is particularly interesting to us in England at this moment, as in present size and completeness it closely approaches the King's scheme. It is intended for patients of the poorer classes, the charges being about 30s. per week for first, and 12s. per week for second-class patients.

You will see by a glance at the ground floor plan that the patients are accommodated in dormitories as at Ruppertshain, but here each dormitory accommodates eight patients, except for six small rooms to accommodate two each. The lay-out of this main patients' block is fairly good as a whole. The sanitary blocks are not, of course, sufficiently isolated for English ideas. But the chief fault lies to my mind in the size of the dormitories, and the fact that each acts as a passage-room for at least one other. As at Ruppertshain, the washing is done in the lavatories and not in the bedrooms, excepting in the case of patients confined in bed, and, where dormitories are used, this is the best arrangement; though where separate rooms are provided it is a very vexed question as to whether washing and bathing should be done in the rooms or not. At Nordrach, where great stress is placed upon bathing, each room is provided with a shower-bath, and in other sanatoria a fixed lavatory is placed in each room. The disadvantages in having wash and supply pipes in rooms are so obvious that I think it is better to have all washing and bathing done in separate rooms, allowing washstands and baths, which may be connected only to the first-class of patients and to those too ill to walk to the bath rooms.

The dining and kitchen block are to the south-east of and rather lower than the patients' block, the ground floor being on a level with the basement of the latter, to which it is connected by a covered way. There are two basements to this block, used for cellars, servants' rooms, offices, &c. This dining-hall is a well placed room, and the cooking arrangements seem excellent.

Alland, like the projected King's Sanatorium, has a fine laboratory block, with mortuary and dissecting-room, also a scientific library, and accommodation for one or two foreign medical men who may wish to visit the place for purposes of study; there is also an electric light-house, laundry, and model farm. These are detached from the main building, and as they are similar to those which must be provided for any general hospital, I do not intend to describe them—the whole is very well and fully set out in the Alland Sanatorium Association's report, published in Vienna, which contains full plans, diagrams, &c.

Albertsberg.—I have included this among my slides, for though I can tell you little about it, it seemed an interesting plan for an inexpensive poor patients' sanatorium, the cost having been but 125*l.* per bed against 173*l.* per bed at Ruppertshain, and 240*l.* at Alland. The dormitories here are for ten beds each, but there are said to be eight single-bedded rooms in the block behind the dining-room. This seems a mistake, for they must, unless the slope in the ground is very great, be somewhat cut off from light and air. Another and very obvious fault is that the open-air galleries are too much sheltered between the blocks; but there seems an idea in the plan, and the use of the dining and sitting-rooms as passages seems an expedient to which no real objection can be taken.

Before leaving these German sanatoria, let me add that they all, except the last, appear too high, having five floors. This, even though the stairs be made easy of go, places too great a strain upon consumptive patients.

Now, gentlemen, having shown you plans of several German buildings, only some of which I have seen, may I be permitted to show you the plan of a small English sanatorium which I know well—namely, that built for the East Anglian Sanatorium Co. at Nayland, Suffolk, and of which Dr. Walker is the Medical Director. This building was originally intended for twenty-eight paying patients, but seven more rooms were fitted up in the roof during construction. You will see here that slightly radiating wings were adopted, and, I believe, the angle which these make with the centre has been found to be about right, that is to say, they afford a certain amount of shelter without shutting off the sidelight from the centre. Each wing contains six ordinary patients' bedrooms (10 by 14 by 8 ft. 6 in.) on each floor, and larger bay rooms at each end; those next the open air galleries being given up to staff officers' rooms so that control is always kept over patients in the galleries and also over the corridors. Practically the whole width of the south wall is window from 2 ft. 6 in. sill level to the ceilings. A corresponding light is put in right across the north

wall of the room above 6 ft. high, and again in the corridor opposite, so that a complete blow through can be obtained.

The sanitary blocks are placed centrally behind the patients blocks, and a nurse's room at each end close to the secondary staircases. The administration block is at right angles to the main block, with a passage through to the dining-room, which is an almost detached room. The small passage connecting the administration block with the dining-room was originally planned as an open verandah, but after one or two south westerly gales which had an unfortunate knack of upsetting nurses with trays passing to patients' bedrooms, glass screens had to be fitted, which in really fine and settled weather can be removed. Now, if one short length of corridor open on one side proved itself inconvenient here, it seems to me that a cottage or villa block sanatorium could never be a success in English climate unless the blocks were connected by enclosed passages either above or below ground, or unless each block was provided with kitcheners and full equipment for serving meals, and either of these two expedients would be exceedingly extravagant, and I cannot see that there would be corresponding advantages.

But to return to the plan before us. Stretching eastwards from the dining-room come the kitchen and offices, with extra larders and stores in a basement under the east end of the block. Here an open corridor is provided, but there is a passage-way through kitchen and pantry, which can be used in windy weather. There is no first floor over the dining-room and kitchen block. On the first floor over the administrative block is a pathological room, and sewing and linen rooms. The front portion of the first floor is similar to the ground floor. On the top floor on the east side are patients' room, and on the west nurses' and servants' rooms. You will notice that owing to the slope of the ground the administrative blocks are mid-way between the ground and first floor patients' room, so that patients on either floor have only to go up or down one flight of steps to reach the dining-room.

I have chosen these plans from those available, almost haphazardly, I am afraid. Open air sanatoria are being built all over Europe and North America. They are to be found in Africa, and I learn from the highest authority that Wei-Hai-Wei is considered a suitable position. In Switzerland, of course, are many of the best known ones, though I do not think that these are constructed on the latest and most scientific methods, which I am endeavouring to describe to-night.

But having seen these few plans, you will probably have realised how extremely simple the planning of small sanatoria is. Difficulties, undoubtedly, increase enormously directly the numbers to be accommodated increase. You are then at once confronted with the question of area covered, and distance from dining-room and kitchen, and the number of floors allowable. As it is exceedingly important that patients should dine in the general dining-room as often as possible, this question of the distance of the patients' rooms from the dining-room is really a vital one. It has sometimes been suggested that the buildings should be built on a great number of floors, and lifts provided. Against this there are two objections (1) the fear that the lower rooms may ventilate into the upper ; (2) the expense of running the lifts, which would have to be very large, as they would be chiefly used in going to and from meals, and therefore by practically the whole of the patients at once.

As to construction, everything that applies to general hospital construction applies here, but an effort should be made not to give the place too much of the hospital air. In this climate verandahs outside the bedrooms are generally considered a mistake. The open-air galleries should be placed either in between the rooms (I have sometimes wondered whether the ideal plan would not be to have one between every alternate room), or at the ends of corridor or quite away from the house. They should not be less than 10 ft. deep, and there should be ample space laterally, say 8 ft., to each person. When I visited Falkenstein and Ruppertshain the couches in the open-air galleries seemed much too close together.

Ventilation.—In some German and, I believe, some American sanatoria mechanical ventilation is resorted to. But this seems a great mistake—one of the objects of the treatment is the hardening of the patients, and for this there can be nothing better than open windows. Casements opening in have been found the best form of window. Sashes only allow of half the window-space being used for ventilation, and casements opening out are most troublesome and noisy in windy weather. The upper parts of the windows should be hopper hung or on centres, and it is a good plan to have lift butt hinges to the casements so that they may be taken right away in hot weather.

Open fireplaces, except for appearance in sitting rooms, are not advisable on account of the dust, and low pressure steam is generally admitted to be the best form of heating. Hot water would, of course, be preferable, were it not that in sanatoria the temperature of rooms may fall below freezing, and there is a danger of burst pipes, and as the radiators are chiefly used for a short time while patients are dressing, hot water will not heat them rapidly enough. Besides, with very long, low buildings such as I have been advocating, hot water cannot be efficiently used.

The best position for the radiator in patients' rooms is another point, I think, to be settled. I show you three plans of patients' rooms at Falkenstein, at the East Anglian Sanatorium, and at a sanatorium recently designed. The position of the radiator in the last, under the windows, has been severely criticised by doctors as not efficiently heating the room, and the other position is probably the best. The foot of the bed has been suggested, and the place seems an excellent one, were it not for the difficulty of moving the bed. The radiators should be fixed at some little distance from the wall to allow of dusting behind, and should be of such a pattern that a brush can be used between tubes.

The doors of patients' rooms and open-air galleries should be made large enough to allow of beds being wheeled in and out with ease. The flooring of patients' rooms and corridors is a question to which a great deal of attention has been given—smooth, plain linoleum is probably the best for both. Tiles, parquet or mosaic are excellent, except on account of noise, and this is of the very greatest importance. Sanatoria with long lengths of corridor and a number of rooms having both doors and windows opening on to them are apt to be so noisy as to have a really bad effect on nervous patients, and everything in the way of rubber door stops, silent window fastenings, and noiseless floor coverings must be adopted. Probably the india-rubber flooring now used in banks, &c., would be the best if expense allowed. The floors of the dining-room may very well be of hardwood, and of the open-air galleries unglazed tiles.

Fixed hanging cupboards running up to the ceiling are better than wardrobes, as dust underneath, behind, and on the tops of the latter is avoided. Electric light is, of course, the best form of illuminant, and its advantages are so great that it should be installed almost at any cost. It is necessary to have the fittings arranged so that the lamps shall not swing and be broken by the draughts that blow through the rooms, and, of course, to have the switches in patients' rooms within reach of the bed. It is also well to have at the same point an extra plug which may be used for keeping plates warm or for a lamp for examining throats. Here also should be fixed the push of the bell to ring in the servants' bedroom.

As to the height of rooms, I have previously said that 8 ft. 6 in. or 9 ft. at most has been found a good and convenient height. I have no doubt that there are many who will criticise this, and it is not in accordance with the custom in Continental sanatoria, where rooms vary from 12 ft. to 14 ft. The advantages of low rooms are :—

1. The reduction in the height of the building, consequently in the number of stairs.

2. The reduction in the cube, and consequently the cost of the building.

3. The convenience of cleaning, the top corners being easily reached with an ordinary mop.

4. The ease of opening the top lights of windows..

But, of course, with such low rooms the windows must be tight up to the ceiling. After all, if patients are to live in a constant stream of fresh air, I cannot see that it matters whether that stream is 8 ft. 6 in. or 14 ft. deep.

Before concluding, may I recapitulate what seem to me the chief points to remember in designing the ideal room of a consumptive patient ?

The room should face south or south-east ; should be ventilated back and front, as should be the corridor behind.

The windows should be the full width of the room, and the sill low enough for the patient to see out when lying in bed, and should be carried right up to the ceiling ; they should open inwards and to their full extent, as well as being entirely removable.

Open fireplaces should be avoided, and the heating provided should be such that the room may be warmed speedily. The doorway should allow the bed to pass.

The room should be as close to dining-rooms, bath, and water-closet, as possible, and separated from them by the least number of steps. The usual hospital precautions against dust should be taken, and the walls and floor should be made as sound proof as possible.

In conclusion, let me recommend to any one wishing to study the subject Dr. F. R. Walter's exhaustive work, "Sanatoria for Consumptives," to which I am indebted for some of the plans I have shown to-night.

Notes on the Construction of a Sanatorium from a Medical Point of View.

Dr. Jane Walker then read the following paper :—

In building a sanatorium for the treatment of consumptive patients, we must keep ever before our minds the meaning of the socalled "open air treatment." This term, which has come into very general use, is a convenient one, but is apt to be misleading, for it has lead, not only the general public, but even people in authority, to assert that all that is required is open air, and that, if windows are only opened, consumption will diminish, and in time cease to exist.

Now the sanatorium treatment of consumption is a great deal more than this. It is a minute and elaborate system made up of endless details, all of which are important. It is not enough to say, open all windows in all weathers, and all will be well, nor even to add : feed all patients very plentifully. With these two points, essential as they are, must be united careful regulation of exercise and rest and constant medical supervision. No two cases can be treated on exactly the same lines ; the sick individual, not the individual sickness, must concern us ; in other words the reaction of a patient to his environment is a very important element in the cure of consumption. The moral qualities which most aid consumptives in recovery are, firstly, strength of will ; secondly, common-sense ; thirdly, equability of temperament. Therefore, the essentials in the treatment of consumption are to preserve and strengthen the physique, to enforce prudence, and to induce placidity. Hence it follows that a sanatorium which is designed to be an ideal establishment, must be arranged (so far as is possible in a mere structure of bricks and mortar) in such a way that not only the physical, but the mental and moral well-being of the patients may be taken into consideration.

In building a sanatorium for a large number of phthisical patients, the points which must be kept specially in mind are that, just as overcrowding and want of sunlight and fresh air are factors in promoting the disease, so abundant space for each patient, and, if it may be so stated, a superabundant supply of fresh air and light are among the chief means of combating the disease. Abundant sunlight and fresh air are necessary on two grounds : firstly, because they tend directly to kill the organisms of disease ; and, secondly, because they increase the patient's power of resistance ; whereas, impure air keeps him in a low state of health, and so renders him an easy prey to the inroads of the tubercle bacillus.

There is in some minds a great feeling against treating patients in a sanatorium instead of in their own homes, partly because of the supposed danger of massing a large number of consumptive patients together, and partly because of the fear lest the treatment in a sanatorium should degenerate into a mere routine, by which every patient is treated exactly alike. The first danger is overcome by (in addition to antiseptic precautions) spreading the sanatorium buildings over a large area, in a somewhat isolated spot ; and the second by realising that the sanatorium treatment is essentially individualistic. In a sanatorium the treatment of consumption is

continuous—it does not consist in prescribing a dose of medicine and then giving no more attention till the following day, but it lies in ceaseless care and attention every minute of the time. For example, the amount of food, the amount of exercise and rest, the time that may be given to employment and recreation, the kind of employment and amusement, and every detail of the daily life, is carefully regulated according to the requirements of each individual patient. A good deal of the necessary routine of the open-air treatment is irksome to most patients, and is easier to bear if the sufferer be one of a community all the members of which are undergoing the same strict regimen.

The following conditions are necessary for an establishment for consumptive patients. The building must be placed on a slope facing south, and at such an elevation above the surrounding country that an air is ensured free from the impurities caused by industrial establishments, business, or traffic of any kind. The building should be therefore in an isolated district, far from lines of traffic, and should be at a considerable distance from any town or large village. It should be so constructed that patients can be distributed over a considerable space, and that there may be constant and efficient ventilation. The building should be surrounded by woods, meadows, and streams, and the farm should be at some distance from the sanatorium.

The sanatorium should be so constructed that the strictest attention can be easily paid to cleanliness; the heating should be by some central system. The greatest restrictions should be placed upon all accessories, such as carpets and curtains, &c., which may harbour dust, and the lighting should be by electricity. But as, in spite of the best ventilation, the air inside a building is never so pure as that without, arrangements must be made to allow of patients spending as much time as possible in the open air, so that the rooms are used practically for sleeping only. In this climate verandahs are a mistake; they keep off sunlight and air. There should be covered shelters either quite away from the house or built as an extension of the corridors.

A very important element in the possibility of constantly living in the open air, and of rational ventilation, is protection from wind. This can best be obtained by placing the building on the slope of a hill at some distance from the top and facing nearly due south. A south wind is rare, and, as it nearly always brings rain, it cannot bring dust, and, therefore, is the least harmful that blows. Another point in the efficient ventilation of the building is the construction and situation of the windows. It is essential that the patients' part of the building, at any rate, should be only one room thick, the rooms facing south with a corridor behind into which open windows facing north. Each patient's room should have practically the whole of the south side window space; the lower part of the window should be of the casement type, as sash windows at the best only allow of half the available space being used as fresh air inlet; the upper part of the windows should be flaps or casements, falling inwards. On the north side of the rooms should be a similar series of upper windows which should be opposite to the windows in the corridor.

In a building such as this, standing in complete isolation, the only source of infection can be from the patients themselves. To eliminate risk from this source as much as possible, all excreta must be rendered harmless, and care must be taken that no infectious disease be able to spread. The means by which this is obtained are by total prohibition of all promiscuous expectoration, by providing each patient with a suitable portable spitting flask when he is out of his room, and placing a properly fitting cup in each bedroom; by having a disinfecting chamber for furniture, clothes, bedding, &c.; by having walls that can be colour-washed and floors that are impermeable. All these measures should be taken, not only to render the tubercle bacilli harmless, but also to eliminate the various other micro-organisms which endanger health. Owing to these precautions, the prophylactic treatment of persons of a phthisical tendency, especially children, can go on side by side with that of consumptive patients.

As carefully regulated exercise and rest play important parts in the curative treatment of consumption, it is necessary in an establishment of this kind to have due facilities for carrying out these two factors in the treatment. The great end in view is to strengthen the heart and body muscles, and with this object the building should be surrounded by a sufficient number of paths at varying gradients, some shady, some sunny, and all free from dust. Arrangements should be made for sufficient rest and avoidance of over-exertion, by providing a large number of benches and covered seats at intervals along the paths. There should also be a suitable couch in each patient's room, and an ample supply of reclining chairs in all the shelters of a kind which will not be injured if left out in all weathers. The extent and duration of all patients' walks must be fixed daily, and notes taken of patients' pulses, temperatures, and conditions as to fatigue, sweating, &c., on their return from exercise. The attention to all these details necessitates constant medical supervision.

The subject of the sanitation of a sanatorium is important. In view of the fact that the Royal Sewage Commission in their interim report practically admit the possibility of bacterial processes producing reasonably good effluents, it would seem that either land treatment, or treatment by one or other of the bacterial processes, might be adopted. The exact method of sewage disposal will depend on the nature of the soil surrounding the sanatorium, and also on the slope of the ground. If the soil be light sandy loam, and the slope and other conditions favourable, land treatment should be preferred. If, on the other hand, the soil be peat, or clogging sand, such as Bagshot sand, probably a septic tank, followed by some form of bacterial bed, will be the best method. Whether land or bacterial process be chosen, a septic tank should be interposed to hold back solid matter, much of which will be liquefied when septic action is started.

In dealing with the land system, some experienced person is needed, who will treat the land carefully, so as not to let it get "sick," and also obtain the best possible results in the way of crops—*e.g.*, cabbages, rye grass, or other growths.

If one or other of the forms of bacterial beds is to be used, Dibden's Contact Bed, Whitaker's Continuous Process, Duckett's Aerobic Self-acting Continuous Filter, or Scott Moncrieff's Process may be adopted. It is impossible to say which of these processes is the best, but, from the London County Council experiments carried out at Barking and Crossness, it is extremely doubtful if any of them can be relied on to destroy pathogenic germs. In the case of the land effluents the destruction of pathogenic germs could not be relied on, but no doubt mechanical separation of the organisms takes place, and also, the process being slow, as compared with bacteria beds, pathogenic germs would be more apt to be destroyed.

Considerable difficulty arises if the effluent must go into a watercourse which, in its turn, runs into streams or rivers supplying water which is to be used for drinking purposes. Provided the water is not subsequently to be used for drinking purposes, sterilisation might be disregarded, if the effluent were non-putrescible and incapable of creating any nuisance. Probably the Mersey and Irwell standard will suffice.

But with regard to effluents running into streams used for drinking water, the subject is very complex, and until the Royal Commission on sewage disposal has made some definite pronouncement on the matter, it would be rash to express too definite an opinion. Personally I should be inclined to say that complete sterilisation, that is destruction of all spores as well as bacilli themselves, is impracticable, except in a very large establishment, on account of its extreme costliness. Therefore the point to be aimed at is to consider whether partial sterilisation, to the extent of destroying the tubercle bacillus, is also impracticable. On this point the greatest diversity of opinion exists. Available data do not permit of a definite pronouncement being made. Thermal processes, though on theoretical grounds the best methods, cannot compete in point of cost with chemical methods. The ozone method has been tried, with apparent success, on the Continent, both with water and sewage effluents, but the cost of installation is a serious element. I should feel inclined to advocate the use of chlorine compounds; for example, bleaching powder, or else sodium hypochlorite. These chemicals are cheap, the former can be bought anywhere, and the latter from the United Alkali Company, and they are possessed of conspicuous germicidal properties. But whatever process be adopted, the effluent, to be of any value, must first be brought into a chemically pure condition, such as has been attained by the Mersey and Irwell Board.

To supplement the remarks of Mr. Brewer on the internal arrangements of the Sanatorium, I have a few observations on the treatment of the walls. The walls of the bed and sitting rooms and of the corridors should be painted or colour-washed with some cheap material. It is not advisable to have varnished walls. There is a constant percolation of air through the ceilings and walls of ordinary dwelling-houses sufficient to materially aid in their ventilation. By varnishing walls, not only is the air prevented from gaining access to the rooms, but a cool surface is presented upon which in cold weather the warmer air of the rooms condenses, and a continual state of moisture of the walls results, which, especially in damp or foggy weather, may be described as sweating. I have found, by personal experience of a varnished bedroom, that all metal things, such as keys, scissors, &c., are continually rusty, and that the room tends to have a damp, musty smell, and that in spite of perpetual open windows. At the Pinewood Sanatorium I was interested to find the other day, when I visited it, that they have similar difficulties owing to varnished walls. There is constant moisture on the walls, and all their metal things, such as the edges of the temperature chart holders, get rusty and tarnished, and so much is this the case that they are putting radiators into all the rooms to try and dry them by heat. I doubt myself whether they will not find that the rooms have to be heated to a high degree to make any appreciable impression whenever the weather is either cold and damp or cold and dry.

The moist condition of the walls is not only unpleasant, but is certainly injurious, as germs tend to breed in moisture, and, though varnished walls can be readily washed and cleaned, yet, unless they are done most thoroughly every day and every part of the wall is dried, I consider that such accumulations of moisture are a very distinct drawback. It is not so much that the walls are likely to be harbourers of the tubercle bacilli, as that anything which forms a nidus for any kind of micro-organism, is to be highly deprecated in a building which sets out to be upon correct hygienic principles.

If walls are colour-washed, and done again as a routine thing from time to time, and the walls of the bedrooms are always done when a patient leaves the sanatorium, the expense is not great, and the certainty that the walls are clean and aseptic is secured.

The description of the daily *régime* of the sanatorium may not be without interest to many here. Breakfast is at 8 or 8.30 o'clock. Before breakfast the doctor visits each patient, and after hearing how he has slept, and what are the pulse and temperature, maps out the morning in accordance with these conditions. Those patients who are well enough to be out and about take their prescribed amount of exercise some time before 12 o'clock. From 12 to 1 o'clock all patients rest on long chairs, either in their rooms or out of doors. During this hour they are again visited by the doctor, who settles what they may do during the afternoon, and all temperatures are registered at 12 o'clock. At 1 o'clock is dinner, which generally consists of three courses. Each patient is given, and expected to eat, the amount of food provided, for the doctor supervises each helping, and though, in common with many other doctors who have to do with the care of consumptive patients, I do not feed patients so largely as I used to do, yet it is really surprising how cheerfully and willingly patients eat three substantial meals daily when they are out in the open air from morning to night.

After dinner patients again take a regulated amount of exercise, and from 6 to 7 o'clock they rest before supper, which is at 7 o'clock, on the same lines as dinner, though it is generally a rather lighter meal. During the evening rest hour the patients take their temperatures again, and are again visited by the doctor. Of course, patients who are quite confined to bed, or those who are at all weak, have their meals taken to them, either in their rooms or out in the garden. Those who are being kept in bed often require to be fed by a nurse, and therefore in any sanatorium in which any but slight cases are taken, the accom-

modation provided for nurses must be ample, for in a day such as I have described, full of endless small, but important, details, a day so arranged as to guard against the slightest fatigue on the part of the patient, good and efficient nursing is one of the most important points. All patients who need it have a visit from the ubiquitous doctor before they settle down for the night. It is of the highest importance to realise that in the treatment of consumption the patients must be considered and treated individually, there must be no massing of them together, either physically, so far as the building is concerned, or mentally, so far as the doctor is concerned; the ordinary red tape of hospital routine will not work with consumptive patients. With some the visit of the most harmless and unscintillating old lady will send the temperature up a degree or two; others suffer from boredom, and require, and are the better for, some amusement and the visits of friends occasionally. Four visits a day from one's medical attendant may seem excessive, especially when one is suffering from a complaint which is likely to last for months, if not for years, but it is, in all cases necessary, where phthisis is at all active, to watch closely the effect of exercise upon the pulse, temperature and respirations of each patient, and to note at once any signs of fatigue. Probably one of the secrets of the so-called "open air" system lies, not really so much in the open air as in daily, intelligent, and tactful management of each individual patient.

Mr. Edwin T. Hall, in proposing a hearty vote of thanks to Mr. Brewer and Dr. Walker for their interesting and up-to-date papers, said the subject was one which naturally commanded the attention of medical men and architects who practised in hospital work—more perhaps than was the case with any other subject of recent years, and emphasis had been given to this by the scheme which his Majesty the King had recently promulgated. There was so much that was admirable in both papers, which focussed so much available information, that there was little to criticise, and he could only support, as the result of his experience and investigation, what had been so well put in the papers. He thoroughly agreed with the authors as to the height of sanatoria. The tall sanatoria in Germany were a great mistake; buildings of four, five and six stories should not be provided where there was a large area of land available because, for one thing, there was the fatigue of climbing upstairs; and if lifts were provided there was the great expense of running them. He thought that buildings of two stories suited admirably, as in the East Anglia building, and he thought the plan, too, of the building was good, although personally he would have preferred to have had the patients' block detached from the other buildings in the centre, so that the east and west winds might blow right across. It had been pointed out that with larger buildings there was the difficulty of combining adequate concentration and a sufficient spreading of the patients over the land. He showed a drawing of the Brompton Consumption Hospital Sanatorium which he was erecting at Frimley, which was exactly the size of the King's Sanatorium, where they had to face the problem of how to concentrate and how to keep the patients well separated. The plan of the main building was a cross, the arms being only one room deep with a corridor behind, as described by Dr. Walker, with windows opposite the doors so as to ensure a blow through. In these buildings they placed eleven patients on each floor in each wing, and though they had 100 patients to deal with those most removed from the centre were only eleven rooms away. As to the vexed question of balconies and verandahs, at the large and modern sanatorium at Harlaching, near Munich, where staff buildings had been erected to deal with 600 patients, and where the accommodation was gradually being increased up to 600, on the south side of the big wards were verandahs extending from end to end. The doctor there considered them admirable from the point of view of convenience, though he thought they were too wide (12 ft.), and that they ought not to be more than 9 ft. wide. These verandahs certainly obstructed the sun getting into the wards owing to the way they were erected, but if they had been columnar and trabeated in treatment instead of arcuated, the result would have been admirable. At Frimley they had tried to compromise, and instead of having verandahs they had rolled sunblinds, which had been provided all over the ground floor. Another thing which he thought was very desirable was that all the windows should be carried down to the ground floor, so that in the summer beds could be wheeled out into the open air when patients could not walk out themselves. Patients could thus get the open air, and, if the sun were too strong, shelter under the sun blinds. At Alland the arrangement was the same as that he had described at Harlaching. As to Falkenstein, it must not be forgotten that that originally was a private house; it had grown, and was not so good a building for its purpose as it probably would have been had it been built *de novo*. Many of the arrangements were very unsatisfactory. Although there might be a great many things to admire in these German buildings, there was one thing to avoid, *i.e.*, any imitation of their sanitary arrangements, for they did not seem to know the first principles of sanitation. One could find three or four water-closets in an evil-smelling room, with one window, in the middle of an institution and a slop-closet behind that. As to the size of rooms, he agreed with what had been said; high or large rooms were not wanted in these buildings, for the patients were to live in the open air as much as possible, and all that was necessary in the bedrooms was room to move about. If they had a cube of 1,100 ft. they had all that was necessary in rooms of this type. As to the position of the radiators, he thought the best position was that which all the German authorities adopted. If they had a radiator under the open window, one of two things would result: either it was chilled by the very cold air, or the hot air went out of the window; and they wanted to put the radiator where they coud get the benefit of it, *i.e.*, at the back. As to the dayrooms, they should have as few rooms as possible. In reference to nurses, at Nordrach, the Garden of Eden where this open-air system originated, the doctor objected to nurses. At Falkenstein there were no nurses unless the patient chose to bring them, but waiters were provided. At Nordrach the place was remarkable in many ways. For instance, there was provided in each bedroom a lavatory in which to wash and another into which to spit, the waste from which ran down goodness knew where. But the place was beautiful in itself—no dust, beautiful scenery, and it had a masterful doctor, who simply compelled his patients to get well. In every German sanatorium there was a good dairy, which was close to the other buildings, as a rule. As to sewage, that was always a great difficulty. Bacteriological beds were admirable in theory, but in practice, he was told, the smell was sometimes abominable; they were good, but much abused. In Germany there was not one anywhere. At Falkenstein, which was a large and extravagant place, the sewage system was remarkably simple. It consisted of nothing more than putting sulphur meal in the sewage, and the effluent, which was without smell, was turned on to the naked ground, apparently without the slightest evil result. The same system, though more elaborate in detail, was applied at the new and perfect hospital at Nuremberg, and there was no smell and no inconvenience whatever. At Planegg, near Krailing, they had the same system. As to wall covering, he agreed with Dr. Walker that some form of distemper was desirable. Varnish was admirable where there was a dry atmosphere and the windows were closed, but where they were open and the walls were exposed to the humid air, varnish became sticky, and was not good for the purpose.

Mr. Keith D. Young, in seconding the vote of thanks, said that what struck one very forcibly about the open-air treatment as a system was that it was preaching the gospel of fresh air. Quite apart from its special application to the treatment of lung diseases, it taught a very valuable lesson in the value of open windows—a value which had been somewhat lost sight of in late years by considerable insistence on the value of another system which depended entirely upon shafts and shut-up windows. As to the height of rooms, he thought we were apt in all hospital buildings to consider cubic space and height to the detriment of floor space, which, after all, was the valuable element in wards, and he could not see what advantage was to be gained by having very high walls. In small rooms, the height Mr. Brewer mentioned was much more to be desired than rooms 12 ft. or 14 ft. high. Not long ago he was engaged in a competition, and he and others were told that the rooms were to be 14 ft. high, he thought, which was an enormous height for small rooms. As to wall surfaces, he was very glad to hear Dr. Walker's views as to distempered wall surfaces. The sanitary value of a wall which could be periodically scraped and resurfaced must be very great, and superior to a varnished wall which might or might not be regularly cleaned down—as a matter of fact, they were not cleaned down as often in practice as they were in theory. The question of floor surfaces was another difficult question. As to the india-rubber floor referred to, he supposed Mr. Brewer meant the American interlocking rubber tiles, which made a beautiful floor, but which cost almost as much per foot as terrazzo, for example, cost per yard. [Mr. Hall: More; it costs 2*l.* per square foot.] He had obtained it for less than that, but in any case it was very expensive. For the wards he should like to suggest the use of teak boards laid practically on to the concrete, without joints. Teak made a very quiet floor, though a noise could be made on it with high-heeled boots — but so it could on linoleum. It seemed to be a most practical form of floor, because it was practically impervious and was not very expensive. Another idea had occurred to him, though he did not know whether it was practical, and that was whether one could have a large sheet of linoleum and countersink it, as it were, on to the concrete. The concrete, of course, must be floated to a good smooth surface, so that the surface of the linoleum exactly coincided with the surface of the corridor floor and all round the room they would have a hollowed skirting, and if they wax-polished the linoleum it would last practically for ever and be quite impervious and very cheap. [Mr. Hall remarked that he had often done this.] He echoed Mr. Brewer's desire that they would soon see the essays and plans sent in in the competition for the King's Sanatorium. The profession would like to see the successful plans.

Mr. W. J. Morton, secretary of the Mount Vernon Hospital, said that one thing which struck him that evening, as it had done before in listening to papers and discussions on this subject, was the absence of any reference to a laundry. No one seemed to think it necessary to have a laundry in which to wash the clothes of consumptive patients; but it seemed an important point, for if there was anything in the theory on which consumptive people were treated, it must be a source of infection to those who were not consumptive to have their clothes washed with those of the patients. They had heard that thermal means were not always effective in destroying germs, and there must be some danger when large quantities of linen in an establishment were passed through one disinfector. Dr. Walker had referred to verandahs being a mistake in this country. He could not quite agree with that, for during the last few years he had seen the effect of patients under treatment under verandahs and, side by side, the effect of treatment in wards, and almost invariably patients did better under a verandah and when removed from the wards; patients, on the contrary, removed from verandahs back to the wards did not do so well. At Mount Vernon they were building new verandahs some 12 ft. wide, 80 ft. long, and 12 ft. high. As to the height of wards, he thought they should be 12 ft. in height; if they had low wards, those wards would get stuffy in spite of open windows, especially if radiators were in them. There was nothing more objectionable than the atmosphere of a room where was a radiator. They would say the open window did away with that; so it did to some extent, but not entirely, and so he did not believe in radiators, but he did believe in the open fire-place. It might be a minor matter, but if they had a fire in a room it was much more comfortable and homelike, and that was a good deal to a patient. The objection to dust could be got over in a properly-arranged Teale grate; with such a grate there was little dust, and the atmosphere of the room was well warmed, with none of the objections set up by the radiator. There were radiators in Mount Vernon, but they were not used; and it did not seem desirable to heat rooms by radiators when the object was to harden patients. As to hardening patients, at Mount Vernon there were thirteen patients sleeping in open tents and improving in health. As one who had watched the

open-air treatment for three or four years he could say it was not so much the buildings as the individual attention given to patients that was so important. There was no "system" of open-air treatment at all; it was the open window, good feeding, individual attention, and regulated exercise that cured consumptive patients, if consumption could be said to be cured, as he believed it could. As to the site of a sanatorium, it was important that a suitable site should be chosen, but that was not the only consideration. However desirable it was to have an ideal site, he thought there was something in the view of Dr. Knopf, when he said: "Let us cure patients as near as possible to the homes where they work"; if you can cure them in London, do so; if 20 miles out of London, do so. If this can be done, do not go 100 miles away. As the result of observation, he could say that this is being done—in the suburbs, at any rate—though, perhaps, the improvement was not in that case so rapid. It was a great help, too, to a poor patient to see and have a talk occasionally with a near relative—a husband or wife—and patients who could see their friends occasionally did better than those who could not. During the smallpox epidemic recently, Mount Vernon Hospital was closed to visitors for fear of infection, and it was remarkable to notice how some of those patients who could not see their friends went back in their condition or remained stationary; and then, again, how they progressed when the prohibition was removed! As to flooring, he had seen and tried several kinds, and he believed there was nothing to beat linoleum upon a deal floor, say. It was soft, quiet, and was not tiring to the nurses, which was a very important point. There was nothing more tiring to a patient than to walk upon a granolithic floor, or a teak floor.

Dr. Hudson said the question of floors was a very big one. If they used linoleum, there was a tendency for the linoleum to crack, and where there were cracks the bacilli germs and dirt could get in, and that, of course, was undesirable. It was better to have plain teak floors and all cracks filled in with concrete so as to get absolute smoothness and leave no room for germs to get in.

Dr. Wethered said that in the preventive medicine of the future architects would have to act more than in the past with the medical profession, and if architects and doctors worked together jointly in such matters, each side would make fewer mistakes. He agreed with most that had been said by the authors of the two papers. He agreed that in this country it was better to have two-storied buildings than high buildings, such as were to be seen in Germany. As to verandahs, there were two sides to that question—*i.e.*, the scientific side and the economic side. Where the verandah was placed depended to a large extent on the amount of money available. If they wanted to build economically, the verandahs, by judicious arrangement, could be placed, without objection to the patients, outside the rooms on the first floor. It was not absolutely desirable to do that, and in the ideal arrangement they would not be so placed. If more money were available, the first floor should be given up to the administrative and other offices. It was a great advantage to have the verandah close to the building, and for it to be unnecessary for the patients to leave the building to get to the verandah. That was very important in the case of patients who could not get out of bed. He considered verandahs of the utmost importance, both for the comfort of the patients and for their general well-being. He thought the less accommodation in such buildings for visitors the better. As to the King's competition, the essays and plans were to be published shortly, and due notice would be given. He wished to thank Messrs. Law & Allen, the architects associated with him in that competition, for their valuable help in preparing the plans. He was quite sure no doctor would have won that competition alone, and he was equally sure no architect would have done so.

Mr. Arnold Mitchell said he was glad the King's competition essays were shortly to be published because the subject was of great interest to architects. He had examined several of the German sanatoriums before preparing his scheme in that competition, and, after hearing the very interesting papers by Dr. Walker and Mr. Brewer, he was a little surprised that no reference had been made to what he considered was the finest of them, *i.e.*, Belzig, which was the most modern and up-to-date of all. The verandahs in that building were large covered shelters in front of the rooms, or, rather, adjacent to them, and he was struck to see the way in which the patients were crowded on to them—the beds and the patients being wheeled out on to them in the daytime and packed so closely that the patients were almost touching one another. That could be improved upon by providing larger verandahs, but what he had proposed in the scheme he submitted in the King's competition was to provide groups of rooms with verandahs in between, and corridors at the back of the rooms. The patients could by that arrangement be wheeled out of their bedrooms into the corridors, and then into the verandah, and by that method a blow through was provided. The verandah treatment was suitable to other than the ground floor without obstructing the ground floor rooms. They had heard how on the ground floor the windows were taken down to the ground level and the bays taken out. Why not apply that to the floors above? As to floor covering, it was obvious that linoleum was the most practical and convenient covering for the rooms, but what was the most suitable in the verandahs and balconies? He had proposed granolithic cement, which took a polished surface and stood the weather well. It did not do to have wood, for a harder and less pervious surface was required. A laundry was an absolute essential in these buildings, and perhaps that was why it had not been referred to in the papers; it was regarded as a matter of course. The gentleman who said he preferred the open fire to radiators seemed to answer himself when he said that the objection to the open fire was the dust. Exactly so; and practically all authorities were agreed that the dust was sufficient to condemn the fire in a patient's room.

The Chairman, in putting the vote of thanks to the meeting, said there was much room in the provision of these buildings for the exercise of ingenuity and common sense, and perhaps common sense was the most essential qualification which could be applied to the planning of sanatoria. There appeared to be two types of these buildings—the ordinary German type which, apparently, generally consisted of a building with a number of floors; and what, he supposed, would eventually be the English type, *i.e.*, a building of not more than two floors. There were advantages in both systems, he thought. If they were dealing with a large number of patients on one or two floors it would be necessary to spread the accommodation over a large area of ground, and so far they must increase the difficulty of service and administration greatly; though from the hygienic point of view there was a great advantage in spreading it in that way. Still, the objections to the many-storied buildings seemed to have been exaggerated, for he could not see what practical difficulty there could be in a well-planned four-storied building, with the administrative department centrally placed and with a good supply of lifts. The objection given to the several-storied building was that it involved the patients and others going up and down stairs, and, if so, that was a very serious objection where consumptive patients were concerned; but surely that difficulty was got over when there was an efficient service of lifts; and, at the same time, in large institutions, it got over the difficulty of administration. As to the height of rooms, he thought that 9 ft. for small rooms would be ample, and anything above would be waste space, and would tend to make efficient ventilation more difficult. The question of floors was a very knotty one, not only in hospitals for consumptives, but in hospitals generally. He supposed the ideal floor was a floor without any joints, for when there were joints there would be a certain amount of shrinkage, and consequently places for the accumulation of dust, dirt, and germs. Terrazzo or cement floors seemed to him to make excellent floors, but they were very cold and uncomfortable. What was wanted was something of that kind which would be more or less of a non-conductor. He believed the Germans had been experimenting in order to produce a floor of that kind, and he had several examples in his office of a floor which is put down exactly in the same way as a cement floor, and was made up of some kind of cement mixed with sawdust. When mixed, the result was a non-conducting material which could be laid without joints. Should that prove successful, it would make an ideal floor. Linoleum, or cork carpet fixed on cement, made very good floors, as he had found from experience, and he had often thought it would answer very well for hospitals. A radiator in an ordinary room was put at the window in order to prevent draughts, but that was not the object in these buildings for consumption; and consequently it seemed to him that the best position in such buildings was in the middle of the room, providing the room was large enough and the furnishing was not interfered with. From a sanitary point of view that position seemed to be the best, for the radiator could be got round and kept clean.

The vote of thanks having been heartily agreed to,

Mr. Brewer, in reply, said as to verandahs he had said he thought that verandahs outside these rooms were a mistake. In say, 9 ft. high rooms and 8 ft. to 10 ft. high verandahs outside, some sun would be shut off. With wards 14 ft. high it was a different matter, but with small and low rooms some sun was cut off by these verandahs, and in our climate sunlight in a room was so much to be desired. He thought that Mr. Mitchell's arrangement of a verandah between the rooms was an excellent one. As to the recommendation that verandahs should not be too far from the building, they were necessary at a distance sometimes, for some patients had to take a certain amount of walking exercise, and it was thought best for them to take it up to their resting place. As to the height of rooms, the German rooms of from 12 ft. to 14 ft. high seemed very depressing. People were accustomed to big wards 12 ft. to 14 ft. high in hospitals, but it seemed a mistake to make the small rooms of these sanatoria the same height as the wards of an ordinary hospital. As to floors, indiarubber was very costly, of course. As to the American inter-locking tiles, the floor at the Birkbeck Bank seemed to be laid in sheets. All means had to be taken in these buildings to prevent noise—more so than in ordinary hospitals—and to walk down a teak floor corridor 80 ft. long caused much noise, which was especially noticeable when the patients were in bed. Teak, too, was four times the cost of linoleum. As to treating patients in the suburbs of a big city, that did not seem desirable, even though they might be near their homes, when land was so very much more costly near a city than it was in the country. As to the flooring of verandahs and open-air galleries, it seemed to him that any hard material would do. [Mr. Mitchell: You suggested tiles, but that seems bad because of the joints.] Well, consumptives were not allowed to spit; if they did, they were removed. As to the position of the radiator, the middle of the room was a good position; but if the bed were wheeled in and out, that position might be a very bad one.

Dr. Jane Walker also replied and said, as to windows opening to the ground—advisable as that might be on the score of fresh air and ventilation, it was not desirable practically, for it took away altogether the sense of privacy, for one patient could easily get into another patient's room, and a patient walking outside would be able to see into the rooms. In theory it was nice, but not so in practice. As to floors, it was the polish that tired the nurses and not the wood. Well-waxed and well-polished floors were impossible in a sanatorium, for all dusting must be done with damp dusters, and dampness and polish are incompatible. With regard to radiators; in a sanatorium, they were not used all day long. The object in view was to keep an equable temperature, and if the temperature outside was 40 deg. the room must be about the same; it must not be kept to the ideal temperature of hospitals. There was no sense, therefore, in an open fire. If a patient had a fire, the patient crouched over it and did not get well, but became worse. The open fire meant dust and, in a large building, more work, which was important from the staff point of view. As to the position of the radiator, when a patient was confined to bed from feverishness, the bed had to be shifted sometimes into the verandah, and that could not be done if the radiator were in the middle of the room. It seemed absurd to erect these buildings near a big town where land would cost so much more than it did in the country. It had been suggested that there should be two laundries, and that suggestion indicated some mis-

apprehension. So far as was known at present the only element of danger in these sanatoria was from expectoration, and the only garment likely to get soiled was the pocket-handkerchief, which was generally of paper and was burnt. An ill patient might sometimes soil a blanket, sheet, or night-shirt, it was true, but in that case the blanket would be put into a disinfector and the sheet and night-shirt would be boiled. When paper handkerchiefs were not used the linen ones should be put into a solution of hypochlorite of soda or other disinfectant. There was no need to fix on the minds of the staff that there was any danger in associating with consumptives; for there was no danger. One thing to be seen to in the laundry was that dirty clothes should not be mixed with clean.

The Chairman announced that the next meeting will be held on December 5, when Mr. J. S. Gibson will read a paper on "Architectural Practice: Real and Ideal."

The meeting then terminated.

THE PROPOSED NEW HOME FOR THE ARCHITECTURAL ASSOCIATION.

A SPECIAL general meeting of the Architectural Association was held on Monday evening in the Meeting-room of the Royal Institute of British Architects, at No. 9, Conduit-street, Regent-street, Mr. H. T. Hare, President, in the chair.

The meeting was held to consider the acquisition of the premises of the Royal Architectural Museum, Tufton-street, S.W., and to ratify, or otherwise, a resolution agreed to by the Committee of the Association to accept certain conditions proposed by the Council of the Royal Architectural Museum, Westminster, in their proposal to transfer to the Architectural Association the premises in Tufton-street. Details of the scheme were published in our issue for November 15, p. 444.

The Chairman said the object which called them together that evening was one of the greatest importance to the well being of the Architectural Association, and the meeting promised to be an historical one in its history. It was therefore gratifying to note by the numbers present, that the decision to be arrived at would receive the endorsement of a large proportion of members, and would be no hasty one, but would be considered from all possible points of view. The need of adequate premises for the work of the Association had been one which had pressed itself upon them for many years; but although it had been felt in the past, he did not think there had been any period in their history at which that necessity had been so urgent as it was at the present moment. Previous to the year 1891 the work of the Association was comparatively limited and no serious attempt was made at actual architectural education. Two or three rooms were occupied at No. 9, Conduit-street, sufficient to accommodate what was then a very small library, and practically no staff except a voluntary one. The meetings were held in one of the galleries on the ground floor. When the studios and various other classes were established it was necessary to acquire greatly extended accommodation which it was not possible to find at No. 9, Conduit-street, and the present premises in Great Marlborough-street were taken. These promised to serve the purpose for many years although lacking in dignity and importance which a Society of the nature of the Association should be able to command. The work and scope of the Association, however, increased year by year, and every session more consideration was required in order to arrange for the classes to be carried on smoothly without friction. Two years ago, Mr. Seth-Smith initiated a movement with the object of raising funds for the erection or acquisition of new buildings, and *pari passu* for the establishment of a day school for the training of prospective architects. The former project, though prosecuted with unbounded energy, and with a considerable measure of success, appeared to have its realisation largely in the future. The profession of architecture is not in the main a wealthy one, and they could not look for any very extended support from the general public, who were lacking in interest and appreciation of architectural art. The funds collected and promised up to the present moment, though amounting to a substantial sum, were still hardly one-quarter of the total which was estimated to be required, and the collection of the remaining three-quarters would probably be a work of some years. The second project, that of the establishment of the day school, had been, however, entirely successful, and is now proceeding in a manner which exceeds the most sanguine hopes with which it was initiated. The numbers attending, and the enthusiasm with which the students are prosecuting their studies, gave every promise for increased success and usefulness in the future. Several drawings on the wall showed some of the work executed by the students during their vacation, and any one looking at those drawings of actual measured work—measured from buildings—would be astonished at the amount of intelligence they exhibited for students who had been at work only one year. It was, he felt sure, better work than would be got from any ordinary student.

The success of the day school had accentuated the need for more room to an extent which was hardly anticipated, and the want was now so pressing that unless they could secure what they required at once, the work must be curtailed and cramped just when circumstances were most favourable for expansion. At this juncture a most fortunate circumstance had occurred, and a proposition had been made to the Association which appeared to show the way out of all their difficulties, and this in a manner well within their means. The proposal was that they should take over the buildings now occupied by the Royal Architectural Museum in Tufton-street, Westminster. The premises consist of a large central hall surrounded by galleries containing an immense and unique collection of casts, the value of which it was impossible to estimate, but which probably amounts to many thousands of pounds, together with eight large studios and office accommodation. The Council of the Royal Architectural Museum propose to hand over the whole of these premises to the Association, together with the equipment and collection of casts, without any payment beyond a deficit estimated at about 700*l.*, and on condition that the Museum shall be maintained and be accessible to the public as heretofore. The deficit was mainly attributable to the comparatively sudden closing of the School of Art, which was carried on in the premises, and which had been a substantial source of revenue. The buildings are held on two leases from the Ecclesiastical Commissioners, one of which expires at Michaelmas, 1926, and the other at Christmas, 1976, at a total rental of 140*l.* per annum. The rates and taxes amount to about 17*l.* per annum, making a total of 157*l.* per annum. The rental of the Association's premises in Great Marlborough-street is 380*l.* per annum. Possession of the Royal Architectural Museum could be given on March 25 next, and by the terms of their present lease they could vacate the Great Marlborough-street premises on June 24 next by giving notice at Christmas. The proposal and the conditions had been very carefully considered by the Committee of the Association in all its bearings, with the result that they are unanimously prepared to accept the gift with gratitude, and the transaction now only required confirmation by the general body of members. The Committee took into consideration the following points:—(1) The position of the Royal Architectural Museum and its accessibility; (2) The adequacy of the premises to requirements; (3) The leases; (4) The alterations required and their expense; (5) The terms of the transfer. With regard to the first, the Committee concluded that any disadvantage there might be in position was more than counterbalanced by the fact that the building was universally known throughout the profession and also one which had an extremely interesting past history. There were also the facts that the Museum was in close proximity to the Church House, Westminster Abbey, the Houses of Parliament, and other notable buildings, and that the entire district was rapidly improving in all respects. Westminster, too, was fast becoming the home of all kindred societies. As to the second point, that of the adequacy or adaptability to the requirements of the Association, there could be no question that there was ample room for all the classes. The only point on which they were in some doubt was as to whether they could arrange to hold the meetings there or whether it would still be necessary to have them at No. 9, Conduit-street or elsewhere. They were hopeful, however, that a meeting-room might be arranged on the premises. The Westminster School of Art had for some years been carried on in the studios, so that they were well adapted for the purposes for which the Association require them. The third point as to the leases, or rather the lease, which expires in 1926. This gives about twenty-four years, and the Committee considered that this period was long enough to warrant them in taking the risk of being able to secure a renewal at the end of the term. The fact that the other lease was for a much longer period should prove of some assistance, but in any case it was proposed to approach the Ecclesiastical Commissioners at an early date in order to ascertain what arrangements could be made for extension. The fourth point was as to the alterations and their probable cost. This question the Committee had been unable at present to go into exhaustively, but a Sub-Committee had been appointed to consider the matter and prepare a report with suggestions. It was evident, however, that the sum which had been collected and promised towards the Premises Fund would not be more than sufficient to carry out all that they would want. The subscriptions having been given on the assumption that a new building was to be erected, it would be necessary to obtain the sanction of the donors for the fund to be applied to the alterations, but there was no reason to anticipate any difficulty on that score. As to the terms of the transfer, there did not appear to be anything to which exception could be taken on any ground. Beyond the deficit he had already mentioned, the liabilities of the Association were confined to a small compensation to one of the art masters and the retention of the present curator, whose services would no doubt be of great value to them. The opening of the museum to the public could, it seemed to him, only result in benefit to the Association, as it would tend to make it more widely known and appreciated. The Association undertook no responsibility which the present Council of the Museum had not borne since its institution, and the possession of the collection of casts would be of the greatest value in the educational work of the Association. It seemed to him, personally, as it did to the Committee without exception, that the gift of these premises was the most fortunate circumstance which had occurred to the Association during the course of its long history, and he trusted it would prove to be the starting-point for a widely-extended sphere of increased usefulness. He therefore formally proposed that the Architectural Association take over the premises and equipment of the Royal Architectural Museum and Westminster School of Art on March 25, 1903, and accept the conditions named by the Council of the Museum and agreed between the respective solicitors.

The Chairman also read extracts from letters from the following gentlemen, expressing their approval of the scheme—*i.e.*, Mr. H. L. Florence; Mr. T. Watson, who wished his name to be added for 10*l.* 10*s.* to the list of subscribers; Mr. A. T. Bolton, master of the day school, who said his contribution promised towards new premises was at the disposal of the Committee for the new scheme, and he would be glad to contribute a like amount next year; Messrs. D. J. Budge, J. Norton (a past President, who enclosed a contribution towards the scheme), C. H. Brodie, F. E. L. Downes, and A. O. Collard.

Mr. Louis Ambler then briefly seconded the motion to take over the premises of the Museum.

Mr. W. H. Seth-Smith, in supporting the motion, referred to the way in which Mr. Maurice B. Adams had brought the matter forward. Mr. Adams had for years apparently foreseen that the profession would require that invaluable museum of casts at some time for the education of students as well as the enlightenment of the public. That was what the museum was formed for; that was its specific object. The museum, with the aid of the Technical Education Board of the London County Council and the Education Department, had not only been maintained, but a group of excellent classrooms had been provided for the Westminster School of Art, as good as any the circumstances of ancient lights would permit in London. The main purpose of the museum was for the use of the architectural profession, and therefore it was quite legitimate to terminate the School of Art when full use could be made of the museum by the profession. A number of subscribers had also helped to maintain the museum in the

past, and it was to be hoped they would continue their subscriptions in aid of the Association work, for, although they were getting the premises as a gift and their future rent would be a great deal less than what it now is, the Association would not be run at a less expense, and he should not be surprised if the expense were greater, in spite of the fact that they had over 4,000*l.* promised, or given, for new premises, and which would no doubt be available for alterations, repairs, and equipments. He hoped they would be as free to deal with the casts in the museum as objects were dealt with at South Kensington. To have their full value they would have to be circulated in the classrooms as models for study by the students.

Mr. Maurice B. Adams said he never expected that what was now proposed would be under discussion in his lifetime. He always felt, however, that the change in taste which had come over the profession during the past few years would some day revert in some form to the particular type of objects which were brought together in the Architectural Museum, seeing that they represent the national mediæval style of this country in a very remarkable and complete way. It was not to be supposed that because the Association became possessed of these beautiful works of art that therefore a revolution was about to be performed. These casts—they were not all casts; there were many actual specimens—were all dissociated from the surroundings of which they formed a part originally, and they should be brought before students by an intelligent and capable teacher, who should enable the student to realise what the things really meant and what they really are. Looking at them as a whole, they were, as had been said, merely the dry bones of architectural art; but in the hands of a qualified teacher they could be made to live, and, therefore, no better use could be made of such a magnificent collection than that which was proposed. There were a great many things in the museum which were, more or less, of archæological value, and for many years it had been his aim, although funds did not permit, to relegate the more uninteresting specimens to a less prominent part, and bring into relief some of the exquisite gems the museum contained. It had always been the custom when students required any particular cast, except some of the larger ones, such as the spandrels from the Angel choir, Lincoln, to bring it down and let the student study it in the quiet. As to keeping the museum open to the public, he thought that it would be very much to the advantage of the Association, as Mr. Hare had said, to be the owners of one of the permanent fine art collections open to the public, and open to travellers, in London, for it would make the Association better known throughout the world. The Association would not be restricted in any way in possession except so far as the general hall was concerned and the immediate appurtenances, so that all the classrooms would be private property absolutely. In regard to the whole question, the occasion was a very pleasurable one to him, especially as every one had co-operated with him in this effort which he had made for the good of the profession. There were no personal considerations; they wanted to do the thing thoroughly, and the transfer had been heartily supported. They did not mean to let the School of Art suffer if they could help it, and they hoped to get the Technical Education Board of the London County Council to find quarters for the school, which was one of the finest art schools in the kingdom. The museum was in good repair, but they had not been able to do what they wanted to do—*i.e.*, to take the casts down and colour-wash the walls, rewire the casts and rehang them in a more reasonable way—not that they were badly hung, but they were crowded, and some of them might be dispensed with. He should not advise that the casts be circulated about the country, for many of them were very delicate and some of them were unique. That was one consideration which led up to the thought that the museum should be more in the hands of the profession. The museum had been necessarily but gradually leaning more and more upon funds of outside bodies, and copies of the casts were frequently being asked for, and, as some of these were extremely fragile and undercut, he did not see his way to have further copies made in all cases. It was quite certain that without the assistance of the Council of the Museum it would have been impossible to do what was now proposed.

Mr. F. T. Baggallay supported the proposal, remarking that his confidence in the scheme rested really on the approval which the Committee had given to it. He imagined that the financial responsibility of the Association would be greater than it had been, but, no doubt, the Committee had considered all that and were satisfied. He thought the Association would do well to get these premises.

Mr. C. F. Hayward, F.S.A., said, as one of the oldest members of the Association and as a member of Council of the Museum, he hoped the Association would accept the offer which had been made. It gave him great pleasure to think that the Association and the Museum were coming together in this way. He suggested that all the subscribers to the Museum should be asked to continue their subscriptions and assist in the original object with which the Museum was formed. He for one would be glad to continue his subscription. He thought that from 50*l.* to 100*l.* could, perhaps, be got in this way for the special purpose of attending to the casts.

Mr. Owen Fleming said that many of them had always had in their minds the idea that some day the Association would require to be housed in a suitable permanent building, and many of them had hoped that the collection of casts at Tufton-street would form part of that building. The present scheme was as much an advance on Great Marlborough-street as was Great Marlborough-street on the little rooms they used to occupy upstairs at No. 9, Conduit-street; but he hoped they were not going to end at Tufton-street, but were going to keep in mind a building as much in advance of Tufton-street as that was upon Great Marlborough-street. The subject of education was of the utmost importance, and while in Tufton-street they could make great progress, yet they would still need the advantages which were necessary for a successful school of architecture. He had recently visited some of the American schools, and he was astonished at the facilities which were placed at the hands of the students of architecture there. In Boston, for example, there is a building perhaps six times as large as the Tufton-street building, in which every requirement was at hand. On the ground floor there were large testing-rooms with all sorts of appliances, on the first floor were magnificent libraries, classrooms, figure and life rooms; and other rooms on the upper floors. The building was given by a wealthy American, and if we could not get the University of London, or the Technical Education Board, or the University of Oxford, or some other body, to move, he hoped that some day some wealthy man who realised the importance of architectural education would provide a building suitable to their needs. He hoped the Committee would regard the present proposal as a temporary one, and that they would not incur very large expense with a view of making Tufton-street the permanent home of the Association. As to the Westminster School of Art, that it was proposed to displace, it was not an ordinary school of art. It had a great history and an equally great reputation in the world of painting as one of the finest, if not the finest, life school in the kingdom. He had therefore been wondering whether it would be possible for the architectural students to work in harmony with the students of the art school, and so keep all the students of painting and sculpture working with the students of architecture, producing a school of fine art. One part, in that way, would react on the other part, and so produce a really fine school. When in the States he had realised that a curious struggle is taking place between the Old Colonial school of architecture and the French school. The Old Colonial work was the logical development of our Old English architecture, and there was a strong following of it in America led by Mr. McKim, who had remodelled the White House on Old Colonial lines. In America it was regretted that there is no school of architecture in England to which young Americans could come, and that consequently they all went to Paris and got imbued with French ideas and notions, which he (the speaker) had been told took them twenty years to get rid of. He hoped the Association would so develop their school that it would become a central school of fine art for the English-speaking races in which architecture would play a leading part, and which would attract young Americans as well as young Englishmen. The gift of the Museum was a magnificent one, but let them regard it as but a stepping-stone to something better.

Mr. E. O. Sachs said he hoped they would regard the gift as a permanent, not a temporary one, or as a temporary home for the Association. As one who had been taught in large rooms—in the Technical College at Berlin and afterwards at Vienna—he thought it was not, after all, a question of halls and rooms, but of teachers and work, and there was the very great risk of teaching too academically in these halls, and he was afraid that in Berlin and Vienna there was not the same progress being made now as had been made in the past. They all knew from the illustrated papers the sort of work being done now in some of these cities—that it was becoming academic. He did not think it was in the big halls, such as they had at Boston, that great progress was made. He hoped that the word "Royal" would be retained for the museum and obtained for the Association, and it might be a suitable time to petition for it. He hoped that the Committee would see that the leases would be continued to the Association. He hoped, too, it would be found possible to have their social gatherings, at all events, in their new home. When they were having the whitewashing and distempering done in the studios, would it not be well to have drawn round as a frieze a scale in feet and mètres, or in feet only, so as to accustom the students to estimate size and length at a glance—a qualification which many architects sadly lacked.

Mr. F. N. Reckitt said he hoped the Committee would make provision for future extension, and would, where possible, acquire adjoining land or leases.

Mr. Thomas Blashill supported the proposal. The premises were five minutes' walk from the junction of Bridge-street, Westminster, and the end of Parliament-street. It had been said that the Museum was out of the way, but it was not so when they could reach it in five minutes from Bridge-street.

Mr. F. G. Hooper, Hon. Treasurer, said that while the financial aspect of the proposal was favourable, the Association would still have to look not only to those who had already promised help, but for an increased amount of support to carry the scheme through effectively. A great deal would have to be done to the building, and the Association would need the help of its friends both inside and outside.

Mr. Satchell also made a strong appeal to the same effect, and Mr. Watson expressed his approval of the scheme in a few words.

Mr. Max Clarke said he hoped the Committee had considered the matter in a thoroughly business-like manner, and had fully calculated what the enterprise would cost, and whether they had sufficient funds to carry it out without perpetually asking for help. He very much agreed with Mr. Fleming's remarks, but for all that he thought the proposed transfer was a good one. Still, he did not think the Association should remain permanently in Tufton-street—the premises were five minutes from Bridge-street, they were told; what a pity it was not five minutes the other way.

Mr. White and Mr. Lishman having spoken,

Mr. R. P. Jones asked what accommodation there would be for the ordinary members? Not counting the large room for meetings, there should be three rooms provided for the ordinary members—a reading-room corresponding to the present common-room, where smoking was permitted; a writing-room, where silence would be observed and in which one could make extracts from books in the library without having to take them off the premises; and a room for meals of some sort. One could not expect the Association to provide a chef, but it ought to be possible for them to provide teas. For the sake of country members, it seemed desirable to provide some accommodation of the nature of a club. Was there room at Tufton-street, apart from lecture-rooms, for this accommodation?

Mr. E. H. Swinfen Harris and Mr. Cole A. Adams heartily supported the scheme.

The Chairman, before putting the motion to the meeting, said he quite agreed that it was desirable to keep before them such an ideal as that which Mr. Fleming had outlined as to a school of fine art, but, though that was a most desirable thing, he did not think it was possible at Tufton-street. For one thing, there was not room; but for all that Mr. Fleming's remarks were very valuable, and such as they might very well bear in mind. Questions as to the leases were under con-

sideration, and everything would be done to safeguard the interests of the Association. As to the use of the word "Royal," that was also under consideration. They could not seriously think of applying it to the Association, especially as they did not even know that they would be able to retain the word in connexion with the Museum, now that it was being transferred. There would be considerable difference of opinion as to whether the Association should be raised to the dignity of a Royal society, and personally he did not think it desirable that it should be made Royal. The Association had always been a junior body, and it was essentially a teaching body, and he thought it would be undesirable to have two Royal architectural societies. It would lead to a great deal of confusion, and would infringe on the privileges of the Royal Institute of British Architects. He was glad Mr. Hooper and Mr. Satchell has referred to the need of help, for the Association had not a penny too much, and it was doubtful if the funds they had would be sufficient. As to the accommodation for the members in addition to the central hall where the casts were and office accommodation, there were eight large studios, each of which was as large as the three the Association had at present. Therefore, he did not think there need be any doubt as to sufficient accommodation as to art classes and studios. As to writing and reading rooms, no doubt it would be possible to provide all that, and a larger library than they had at present. There would be a common-room, and no doubt some provision made for refreshments.

The motion was then put and carried unanimously.

The Chairman then proposed a hearty vote of thanks to Mr. Maurice B. Adams and Mr. Seth-Smith for their efforts in the matter, and also to the Committee of the Architectural Museum for having enabled them to carry out their wishes.

The motion having been very heartily agreed to,

The Chairman said the total amount of donations or promises to the New Premises Fund was 4,320*l*.

The meeting then terminated.

THE CHURCH CRAFTS LEAGUE.

THE Bishop of Rochester presided on Tuesday evening at Clifford's Inn, Fleet-street, over the annual general meeting of the Church Crafts League.

Mr. F. Burgess (secretary) submitted the third annual report, which stated that the Society now numbered 380 members, of whom sixty-three are artist and 317 ordinary members. During the year the secretary has received 143 applications for advice.

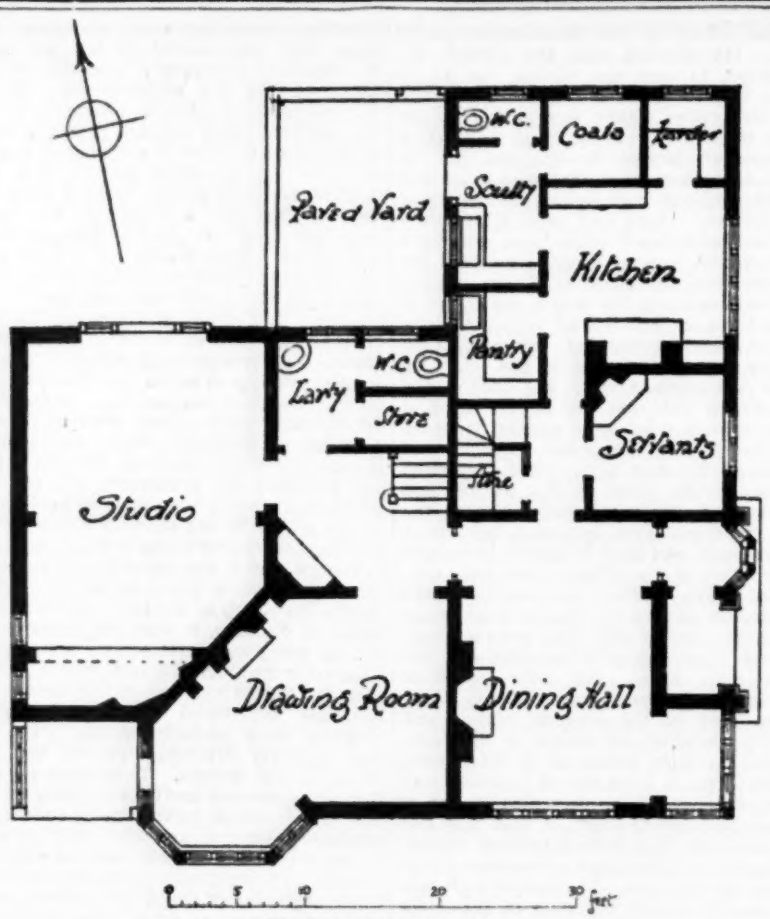
On the motion of the Chairman, the report was adopted.

On the proposition of the Dean of Westminster, seconded by Mr. Dyer Edwards, the Bishop of Rochester was re-elected President.

Mr. Stirling Lee proposed that Mr. Ward be elected on the Committee as an architect, and this was seconded by Mr. Ayrton and agreed to.

The Growth of an English Parish Church.

Mr. J. T. Micklethwaite, F.S.A., in the course of a lecture on "The Growth of an English Parish Church," said there was a class of men to whom an old church was generally the subject for restoration, and this class of men had been so mischievously active during the past half century that one almost hailed as friends the class to whom the church is a place to be gone to once or twice on Sunday, and otherwise left alone. Under the rule of such a class the church suffers from nothing but neglect. But still churches were for use, and if they are used they must be kept fit for use, and that meant that they must be repaired and changed from time to time. That could be done without loss of interest to the building, and even with gain to it sometimes, if it be done with proper understanding and if care be taken to whom they looked for guidance in their treatment. From the days of James Wyatt to now the accepted doctrine as to the treatment of an ancient building has been the same. It has to be smartened up and restored to its original condition. The habit is to take one part of the building as fixing what is called its "period," and to fill up the rest to imitate the work of the chosen period. He wanted to show the fallacy of this mischievous period theory. He claimed that the Church did not belong to any one period, but to all periods, and it may have in its walls traditions far older than any work to be seen in them. It was a long time since St. Augustine landed in England, but he claimed that there were traditions in our old buildings which go back before the coming of St. Augustine. There had been Christianity in the land before we English came, but there was, of course, a great contrast between the two missioners—the polished Italian and the Celt. The first made his way to the houses of kings and princes, and had an important share in the conversion of England; but the Celt did his share, and he believed, in the real hard work of the conversion of the people, the share of the Celt was the larger. At first the two sets of missioners worked independently, but in time they came together, and he believed the first body which professed to speak in the name of the church was the Synod of Whitby in 664. There the Italian traditions were accepted, but many Celts remained, and their influence in moulding the future of the Church was very considerable. The Italian missionaries, when they came to settle here, tried to make things as much as possible what they were at home. They made their large churches aisled churches—naves with aisles, the altar in front and apses at the back, and some of these churches built in the seventh century still exist. The lecturer, by means of diagrams, proceeded to show examples of these early churches. One, in Kent, was of about 650, and another, at Brixworth, he described as one of the nicest churches he knew, in that they had the actual walls of a seventh-century church. It originally had a baptistry and cloister round the front of the nave. At Peterborough they had a church exactly the plan of the older churches in Rome. They also found a large mass of concrete in York Minster which, they would find, had been cut through at both ends, and it was clearly that church which Paulinus began at York. These churches are all absolutely Italian in their form, just the same as churches in Rome of the same date. There were examples of them at Canterbury, Hexham, and Ripon with the altar to the west, which was another Italian custom. Mr. Micklethwaite went on to show diagrams of smaller churches. The first was St. Martin's, Canterbury, which St. Augustine found when he came to England. That was a sixth-century church. Within the seventh century it was enlarged by the building of the present nave. Practically all that is there now, and in that church they had one with a few centuries tradition. Twelfth-century tradition also said that the church of St. Pancras, Canterbury, existed at the time of Augustine. It was said to have originally had a Pagan temple, and no doubt it was built either late in the sixth century or early in the seventh. It was a large broad church, and the peculiarity was that, instead of a chancel arch, there was a screen of three arches. The Church of Luminge was also a seventh-century church, and that at Rochester was built by Paulinus. The church at South Elman, which was on the boundary line of Norfolk and Suffolk, was now in a wood. With regard to the Celtic missionaries, we must look for their earliest form of church in Ireland and in the wilder parts of Scotland. The churches they built were totally different. Of the art of building they had none at all, and their first churches were the simplest things to conceive. The earliest were simply four walls with a queer sort of roof of stone or sods, but when they mixed with the other missionaries their influence was seen in the square nave with the small square presbytery. Another difference was that whereas in the Italian type of church the presbytery was made as open as possible, in the Celtic it was often a very small arch—merely a little doorway. The pure Italian influence seemed to have gone out when the missionary period ended, which did not survive the eighth century, and after that they found the Celtic tradition prevailed in churches in a curious way. Aisles disappeared altogether; the apse almost disappeared; and the triple chancel screen disappeared altogether. They got a state of things in which a new development began, and that was what he might call English development. A church of the simplest Celtic type was that of Deerhurst. They used to build little square buildings at the side of the churches, which they called porticoes. Sometimes they were entrances, but not always. St. Martin's, Canterbury, had one of these porticoes. In the eighth-century church of St. Lawrence, Bradford-on-Avon, they found that porticoes were become nearly as large as the presbytery. Then it occurred to some one or other that he could make a nice bit of finished work by putting one on either side, and so they got a cross in the church, and that kind of church became a type in England. Then it occurred to some man—he wished he knew his name—to cut off the eastern portion of the nave and take it up as a tower. In a church at Dover, on the Castle Hill, they got their cross church with a central tower. This was eleventh-century. They had another example at Ripon, and Deerhurst in its present condition was also one. At the time of the eleventh century there were two types of churches in England which had gradually become accepted—one with the central tower and transepts and presbytery, and the other which was nothing but a nave and presbytery. In the middle of the eleventh century a great architectural revival began in England and also in Europe, and it was impossible to distinguish the English work going on at that date from that in the North of France. And when they talked of Norman, it was impossible to say that the thing was developed on one side of the Channel or the other. It was, however, perfectly clear that the old books which told them that the Normans introduced the new style into England were perfectly wrong. The style was regularly developed out of the older forms of the Saxons. There was no doubt that in the eleventh and twelfth centuries there was an enormous movement for building and rebuilding churches, and when they got an old parish church in a fairly prosperous part of the country they could nearly always trace it back to the beginning of the twelfth century, and as belonging to one or other of the two types in existence before then. Taking the church of Wakefield as an example, the lecturer showed how originally it was in the form of a cross. It had a central tower, two transepts and a square presbytery. That church must have been built within a few years of 1100. In the twelfth century they wanted more room, and they built an aisle on the north side. This was done about 1150, but about the end of that century they wanted more room and built another aisle on the south side, so that the church became rather differently shaped. Then a catastrophe happened which he was afraid was rather common in these churches. They cut into the supports of the centre tower by making an arcade; the foundations were bad, and the tower came down. When the church was rebuilt, in the thirteenth century, they did not pull it all down, but they altered it very considerably. They kept many of the pillars, but they increased the height of the church by adding to the pillars. They kept the transepts, but took the chancel through with a pitched roof, and, for a time, they had no tower. The church was reconsecrated in 1329, and then, for a time, they went on spending money on the furniture, and they did not attempt to proceed with the tower till the fourteenth century had gone and the fifteenth century had begun. The building of a tower in those days was a very slow business. A few pounds was obtained and spent at once by building a few feet, and then they had to wait for more money. In the meantime, the church was in use, and they had to build without inconvenience to those who used it, and so they built the tower outside the church, and that happened in thousands of churches. At Wakefield the tower was begun about 1412, but the spire was not finished till the end of the century. When they had got it done so far that the work could be carried on without annoyance to the users of the church, they joined the tower to the church. Afterwards the chancel was rebuilt and the aisles carried the full length. They rebuilt the aisles of the nave and chancel on the line of the transept, so that the transept disappeared, and now in the fifteenth century they had a big church with not a trace of the cross in it. That church was practically unaltered as regards its fabric until a few years ago, and now they found it a little too narrow for a cathedral, and are hacking it about and making it longer. They would see that every step taken was not done to change the church. They did not build it in any particular style, but for their own use. Each step was simple and natural at the time it was taken, and the result was that in about 400



"Wood Rising," Rye. Plan.

years the form of the building is quite changed. It is much longer than it was; the tower is no longer in the middle; the cross form is gone altogether, and yet the church would never have had its present state had it not passed through the earlier stages. This was a common thing. The growth of Wakefield Church had been normal, and he had discussed it at length to show how absurd it was to talk of the original state of an old parish church. Its original state was probably an old wooden shanty. Churches were intended to be used and there must be changes made from time to time. All he asked was that if they had an old church to deal with they should not touch it until they had been able to understand it, and that in making the required changes they should respect the past, and not falsify it by forgeries. If it be an honest and unaffected attempt to meet real requirements, done with good taste and without any pretence of being other than what it is, it will be an effective addition to the story of the building.

Illustrations.

DESIGN FOR A COLLEGE CHAPEL.

THIS interior for a college chapel, by Mr. John S. Lee, is a design exhibited at this year's Royal Academy.

It was intended that the chapel should be faced with yellow stock bricks, with red brick patterns in the domes, and Portland stone bands, shafts, and capitals. The lower part of the apse was to be lined with Greek cipollino marble; the pavement to be of tiles and half tiles with stone bands.

The plan was sent us by the author too late for publication.

ILLUSTRATIONS OF FORMAL GARDENS.

THE four illustrations given in connexion with this subject, viz.: the garden at Trentham Hall; the gates at Drayton House; the plan of old Hampton Court, Hereford; and the sheet of lead cisterns, are all reproduced, in somewhat reduced form, from plates in Mr. H. Inigo Triggs's fine book "The Formal Garden and Scotland."

They are all referred to in the leading article in the present issue, which deals with Mr. Triggs's book and with the subject generally.

WISHAW ACADEMY.

THE illustration shows the design selected in competition for the re-construction of Wishaw Academy under the Cambusnethan School Board.

The stone used will be Corncockle red sandstone, pinched rock-faced, with polished dressings. The accommodation required was for 750 scholars, while this school accommodates 756. The Board, since the acceptance of this design, have deemed it advisable to increase the accommodation to 912 scholars. The cost is estimated at 10*l*. per scholar.

Mr. John Steel, of Wishaw, is the architect.

"WOOD RISING," RYE.

THE illustration is from the architect's drawing, hung at this year's Academy, and forms the entrance to Mr. Fuller Maitland's recently erected residence on the hill overlooking Red Tiled Rye, the haunt of the artist and golfer.

The plan shows an ingenious arrangement for making the most of the three principal rooms on a limited site, especially in the manner in which the studio and drawing-room are fitted into each other, and the hall and dining-room made to serve a double purpose. Unless it is a question of prospect, the dining hall would have been better with an east than a south light; a south-lit dining-room may be pleasant in the middle of the day in winter, but in summer the luncheon party will be incommoded by the sun; a point apparently often overlooked in house planning.

INTERNATIONAL FIRE EXHIBITION.

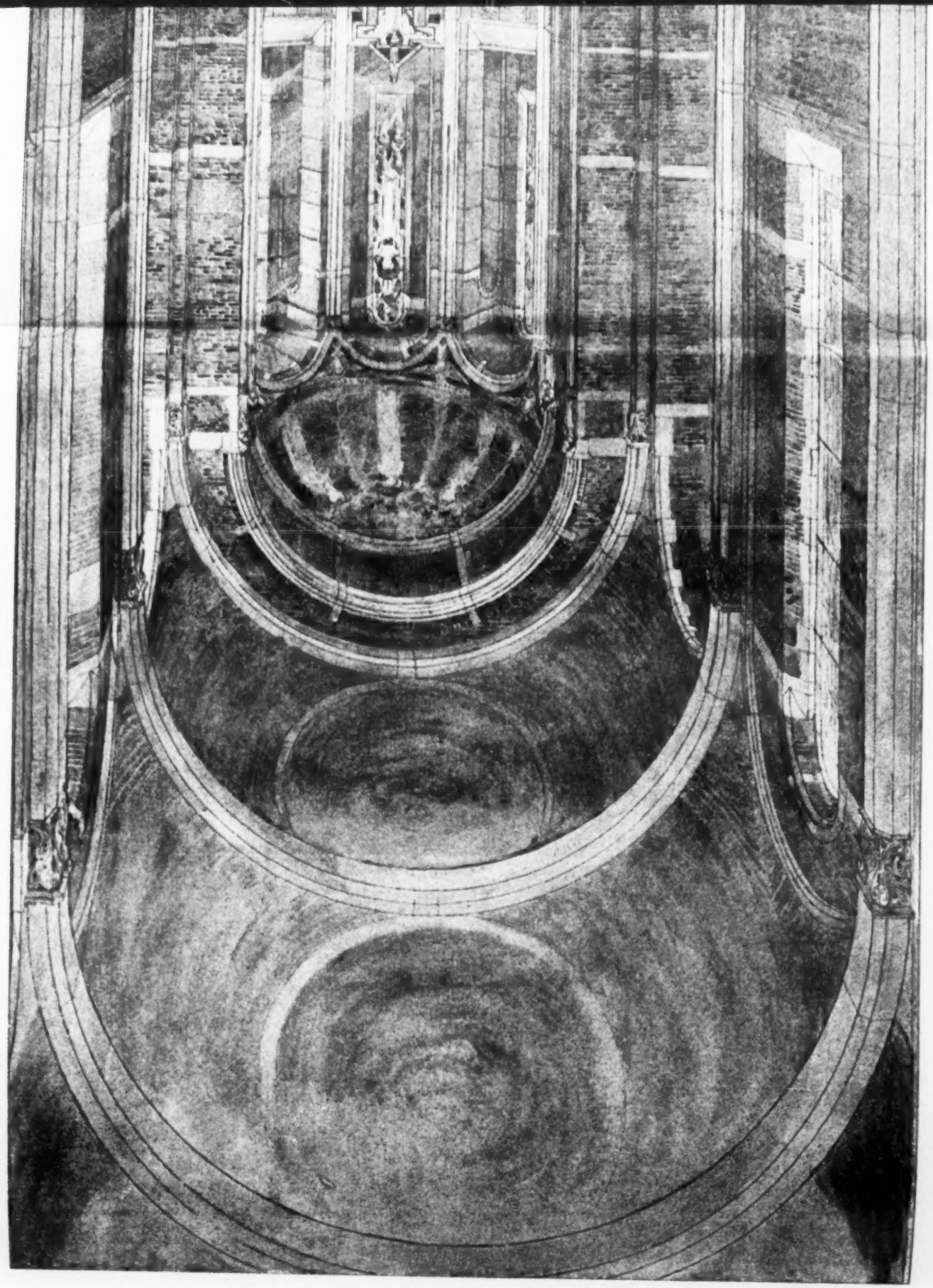
ON Wednesday morning a meeting, convened by the British Fire Prevention Committee, was held at the United Service Institution in furtherance of the proposed International Fire Exhibition to be held at Earl's Court next year.

The Duke of Cambridge, who presided, briefly addressed the meeting, and pointed out that public interest in sanitary matters had been most advantageous to the public, and he trusted that the measures to be sought for against fire would be equally advantageous. They had had some very severe instances before them of late of the necessity for improvement, and he hoped that that meeting would be the commencement of an era of improvement in this respect.

Mr. E. O. Sachs (Chairman of the British Fire Prevention Committee) said the Exhibition was to be international in the full sense of the term, and was to be a highly instructive Exhibition, not only to the technical expert, but to the general public. Until recently the general public had not had any active interest in fire protection, although they had in many other technical branches taken a great interest. In sanitary work especially the public had taken an interest, but whilst a man would go and take a house or a shop in which he intended to spend his life, and would ask most carefully about the drains, it was ten chances to one that he would never give a thought to the safety of life from fire in the building which he intended to inhabit. London had been the scene of many serious fires, and some five years ago they had a catastrophe in the Cripplegate fire, which was an exceedingly serious one. The mass of property destroyed there was enormous, and the result of that conflagration was that many proposals were made to better the present position with regard to fires; but he believed that the only really useful thing which was done, as distinct from mere talking, was the formation of the Fire Prevention Committee, which, after five years of hard work, had doubtless got a great deal further in showing what fire-resisting materials and appliances would really do. Whatever the scientific work of that Committee might be, it only applied to the very few, but the exhibition such as was being now organised was an exhibition which would popularise, they hoped, the subject amongst the public, and thus create that interest in fire protection which not only London, but the whole of the provinces, was so much in need of. They knew that at an exhibition of this kind there was always a great deal to be learned, and they would welcome the foreign exhibitor who would show them means of fire protection, all the more because many of them thought there was a great deal to be learned in fire protection and fire appliances, but, at the same time, when those foreign gentlemen came to the exhibition they, as Englishmen, would be able to teach the foreigner a great deal. They would teach them the smartness which was to be found in the English fire-brigades, and although there was, no doubt, something to be learned in the way of fire appliances from the foreigner, yet they considered the British fireman second to none in activity and bravery. With regard to the organisation of the Exhibition they had been favoured with the assistance of a very practical and eminent advisory committee which comprised men of engineering and technical fame, and those gentlemen had kindly consented to work in the form of sub-committees. Then they would have sections dealing with fire prevention, fire fighting, fire calls, salvage work, ambulance service, water supply, insurance, municipal section; history, literature and art, scientific and social, combustibles and explosives, and furniture, fabrics, and general exhibits pertaining to fire protection. Section 1, which was called fire protection, contained everything that related to the better building and the better construction of property. Fire fighting was the fighting of a mutual foe, for Americans, Frenchmen, Germans, and Englishmen were all anxious to fight fire and to prevent the loss of life and property. They all trusted it would be a useful exhibition in the interests of humanity.

Major Fox, of the London Salvage Corps, and Vice-President of the National Fire Brigades Union, spoke as to the advisability of doing everything possible to assist fire prevention. There was no doubt that the necessity for improvement was growing greater and greater as the buildings in all parts of the world got higher and higher, and they had to look at it more from the life-saving than the property-saving point of view.

Mr. Thomas Blashill (late Architect of the London County Council) said he had been induced to lend his name to the Exhibition in the hope that something would be done to promote the safety of life and property from fire. It had happened to him to have seen a great deal of the disasters to property from fire in the last few years—for some of the greatest fires ever known in London had happened in the last few years in spite of the greatest precautions. He had taken a great interest in the use of non-combustible and slow combustible material, and the first thing he hoped they would attend to in the exhibition and at that gathering, would be the prohibition of the use of combustible materials in places where they were likely to



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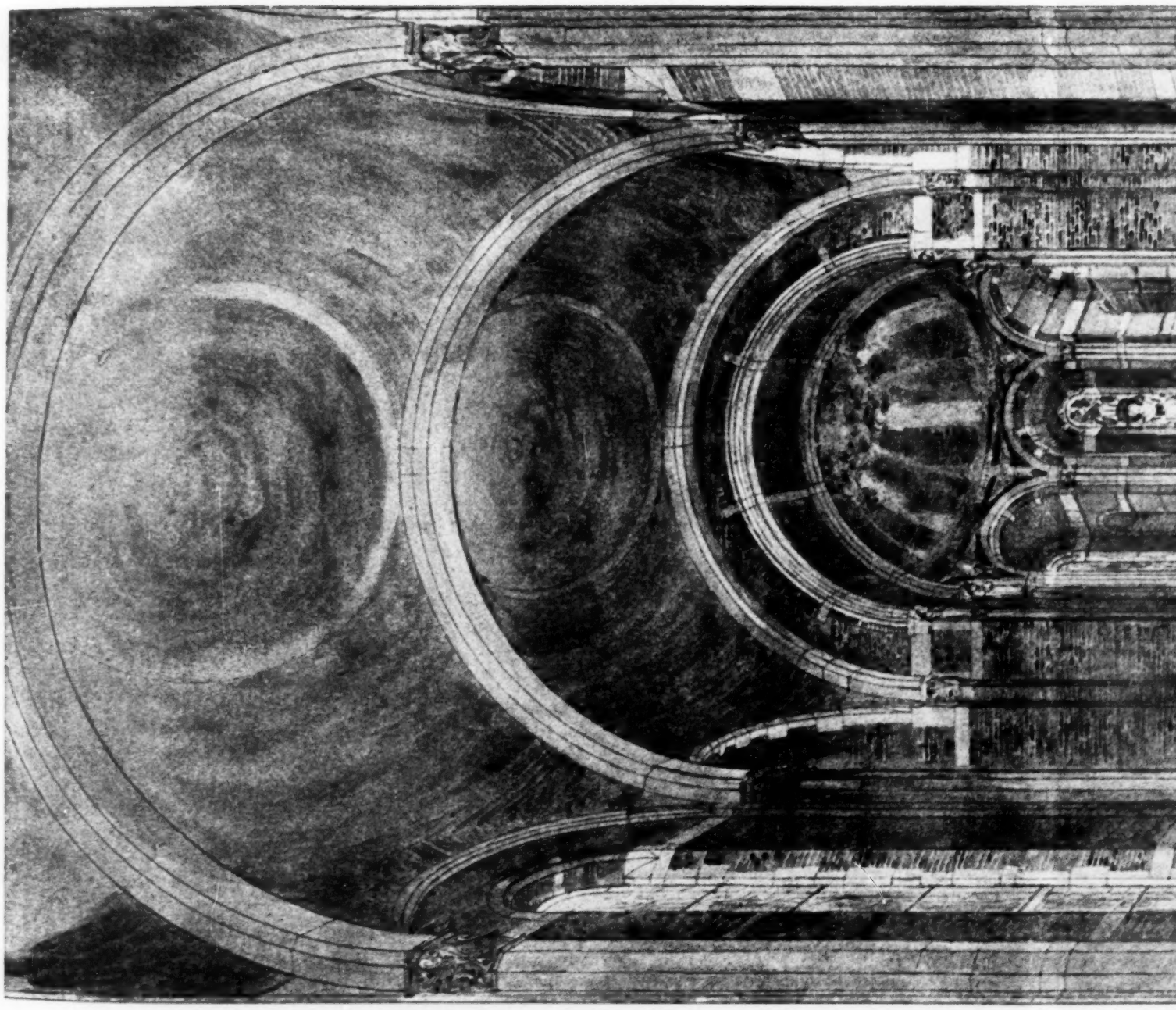

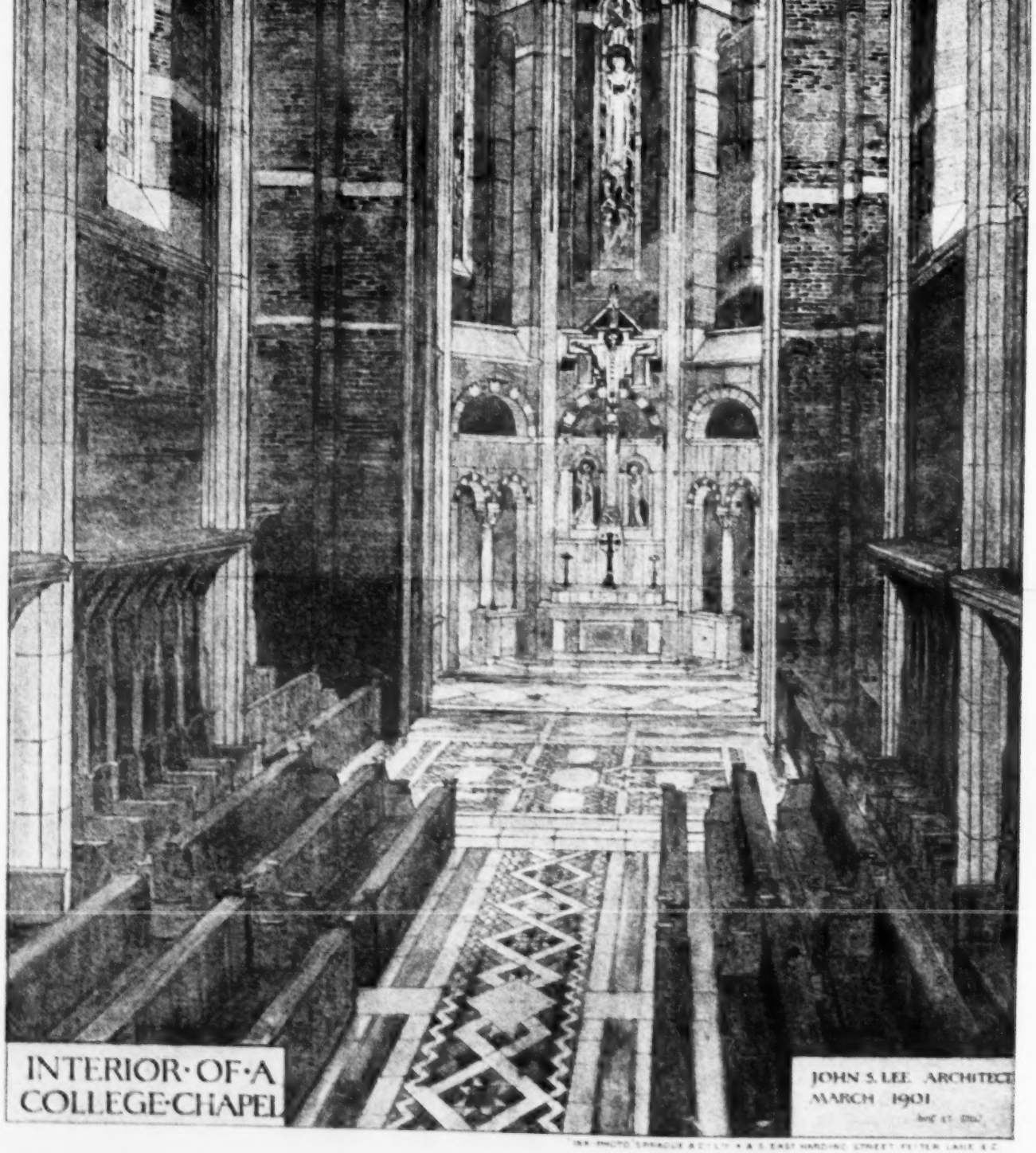

INTERIOR·OF·A
COLLEGE·CHAPEL

JOHN S. LEE ARCHITECT
MARCH 1901

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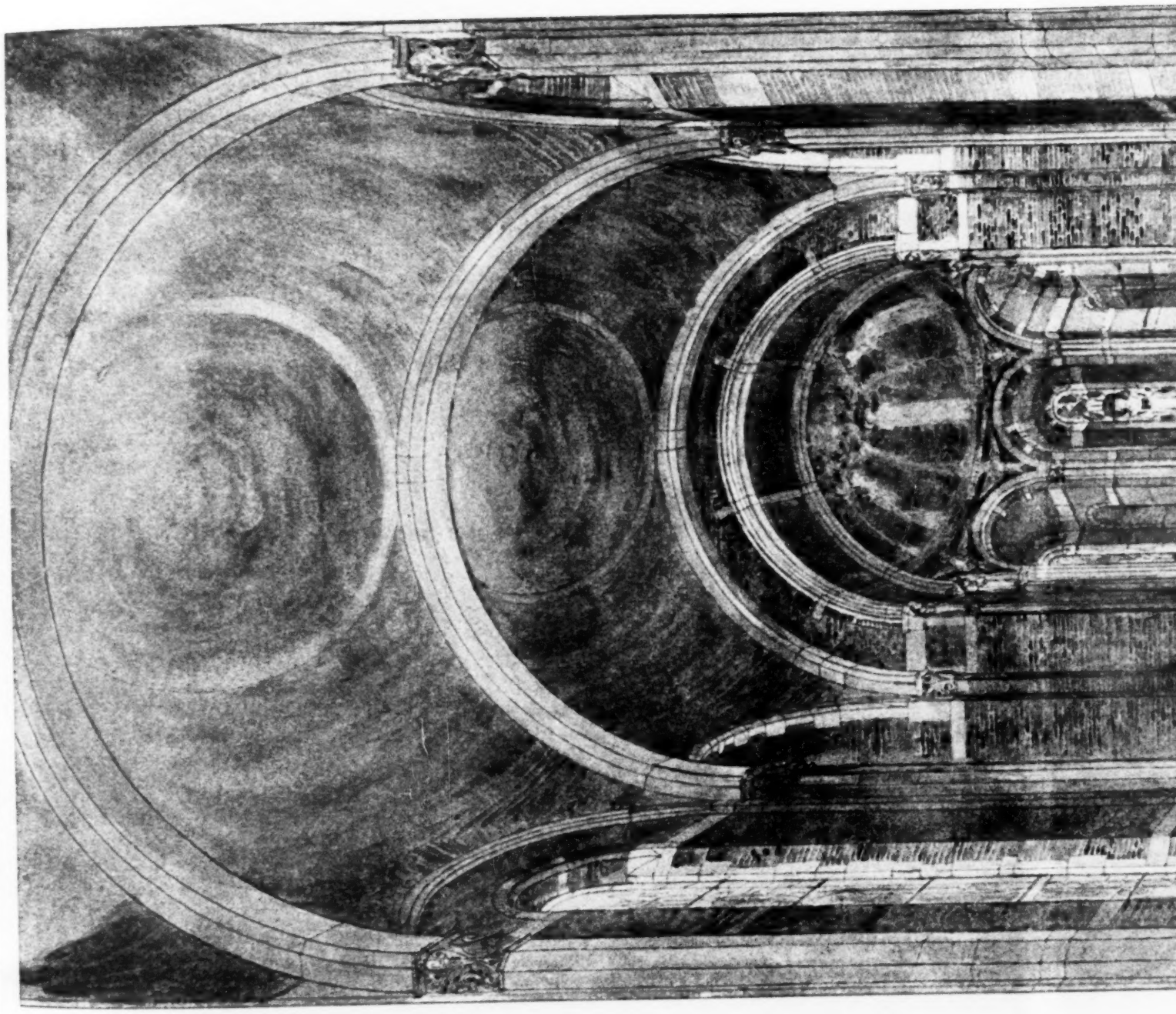

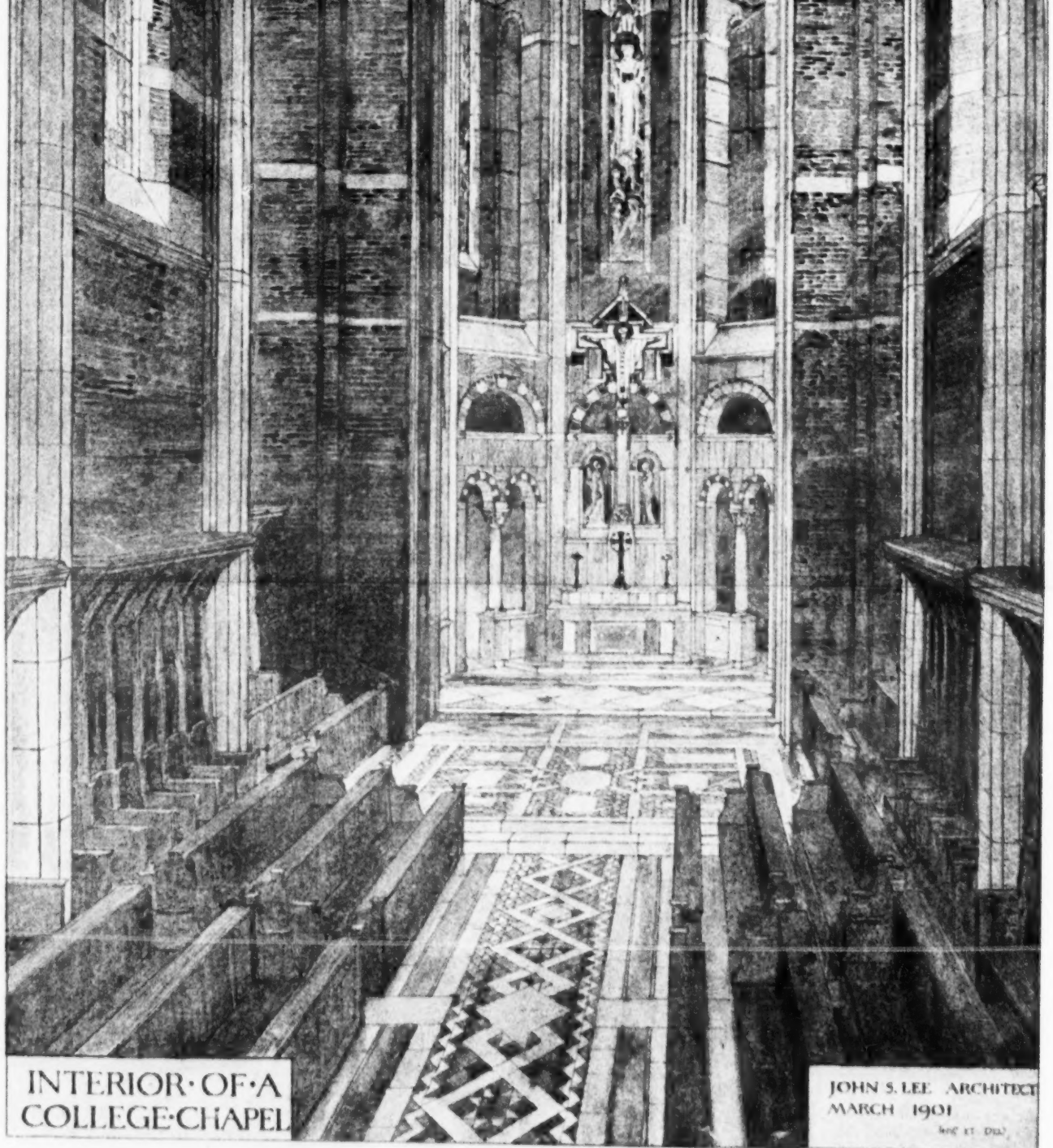

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MARCH 1901

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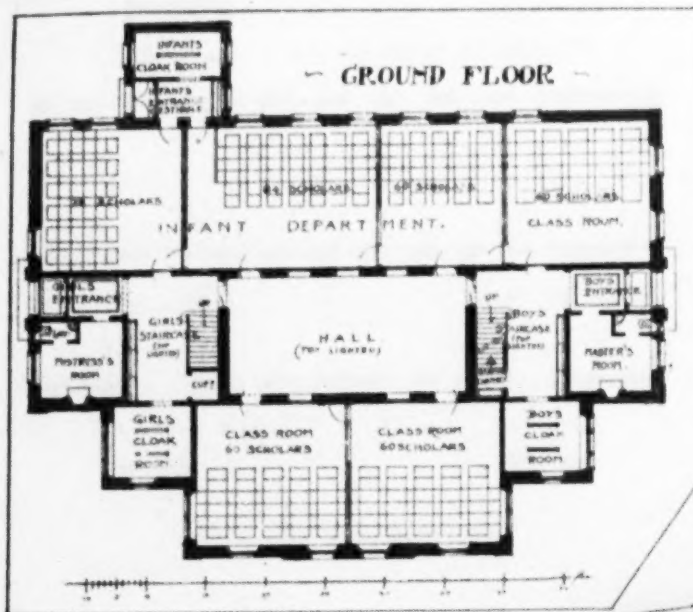

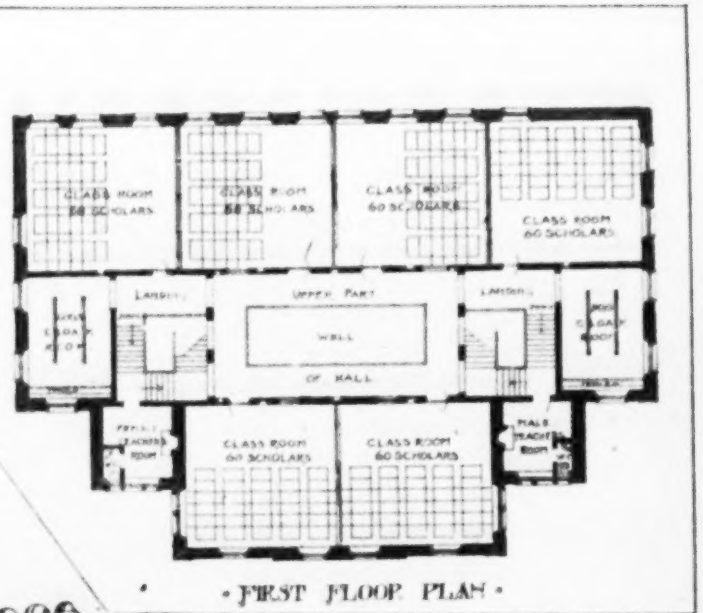

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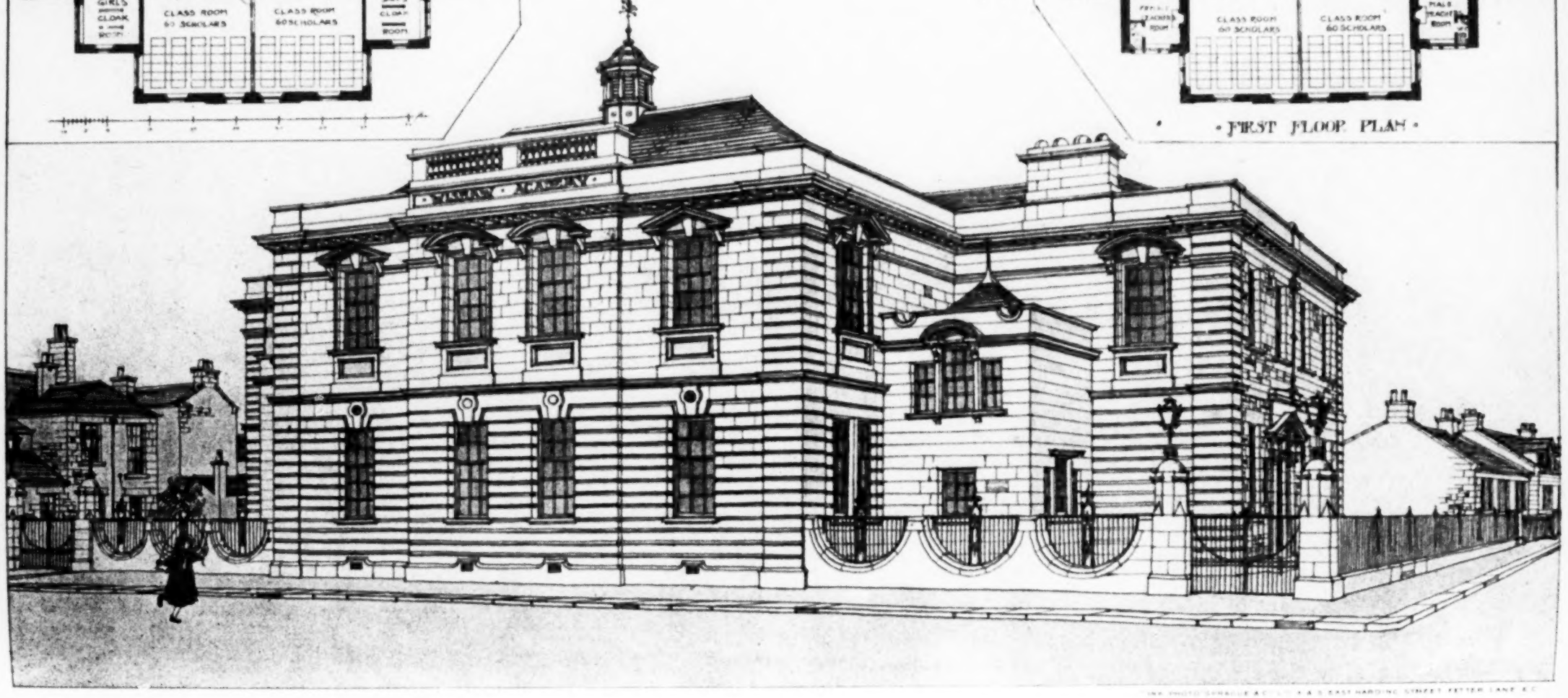
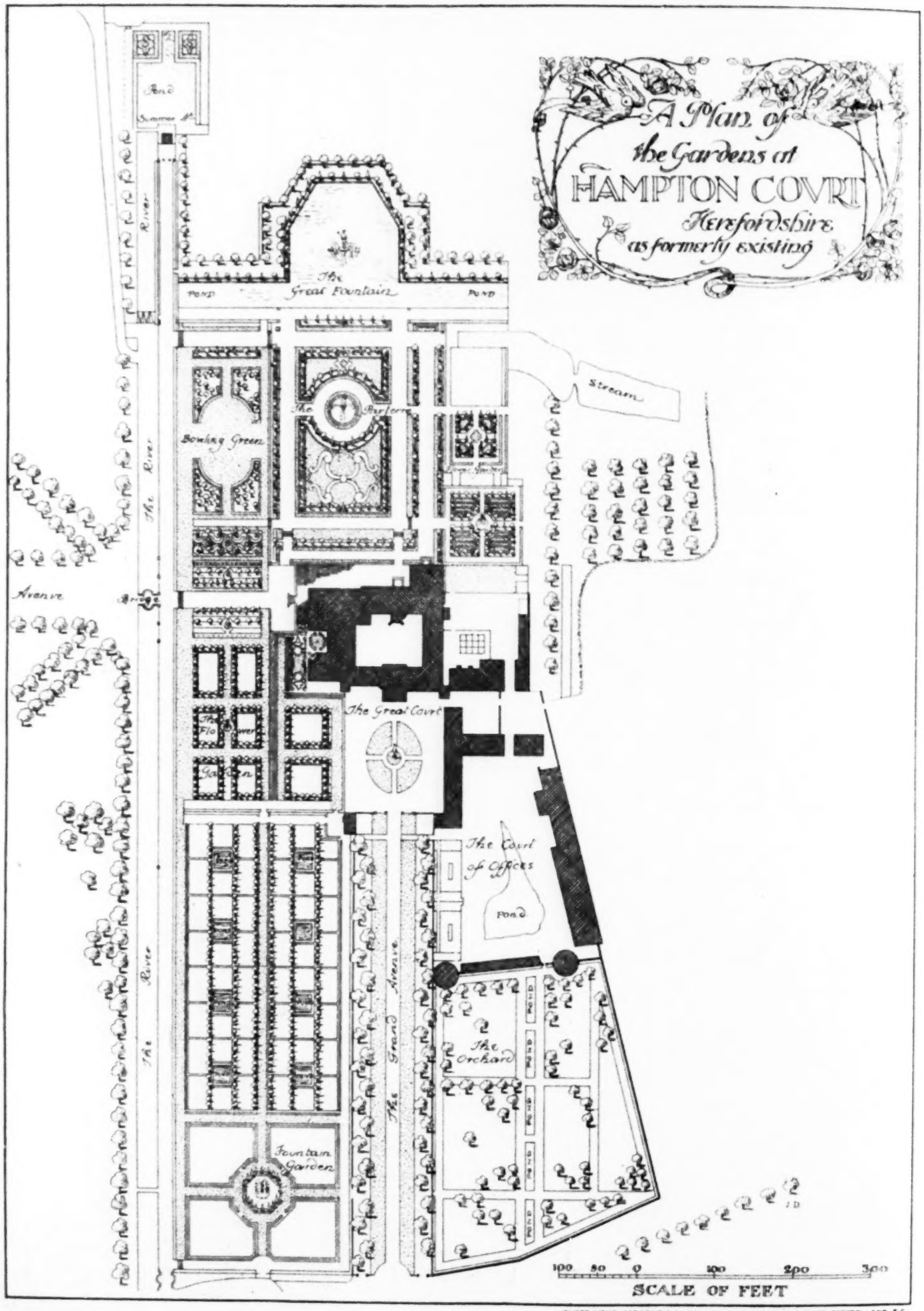


WISHAW ACADEMY.—Mr. Jas. Steel, Architect.



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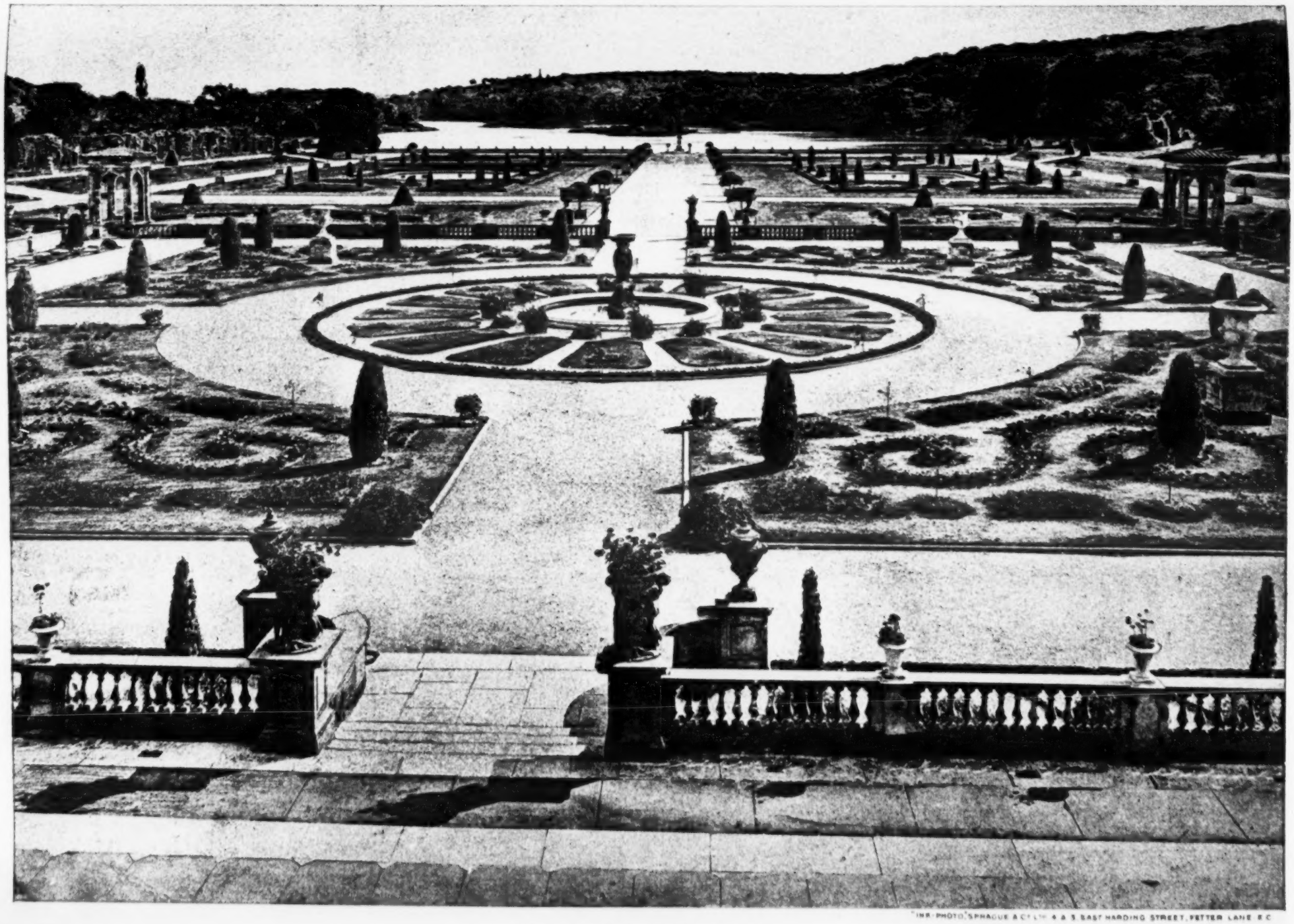

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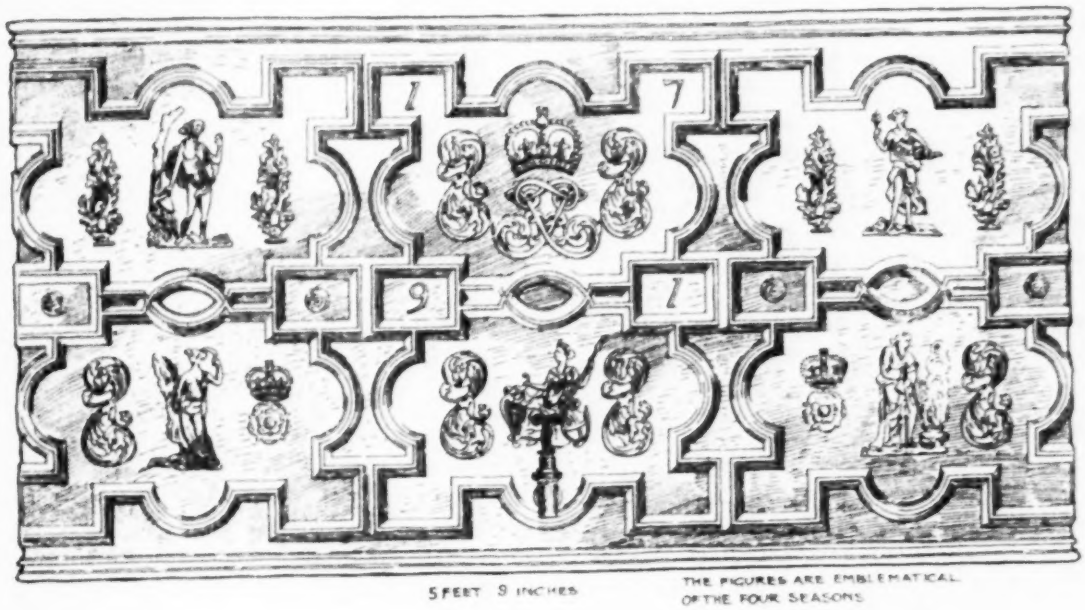
THE GARDENS, TRENTHAM HALL.

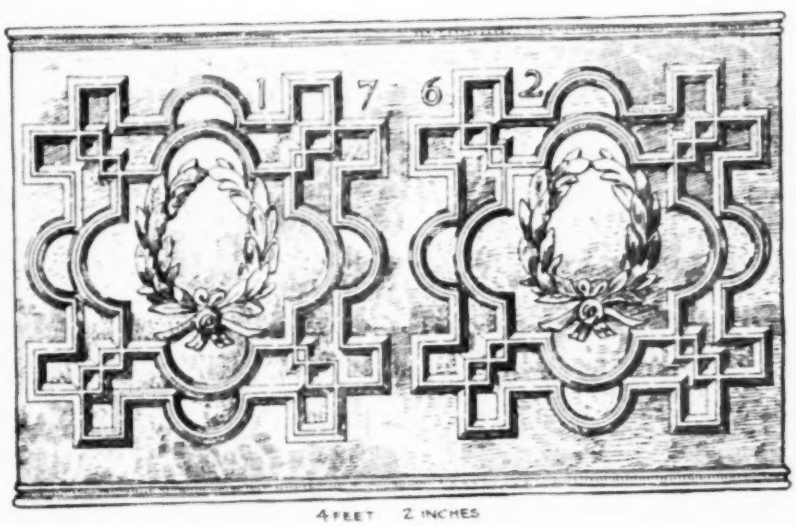
LEAD CISTERNS *From Enfield Old Park.*



2 FEET 8 INCHES

5 FEET 9 INCHES

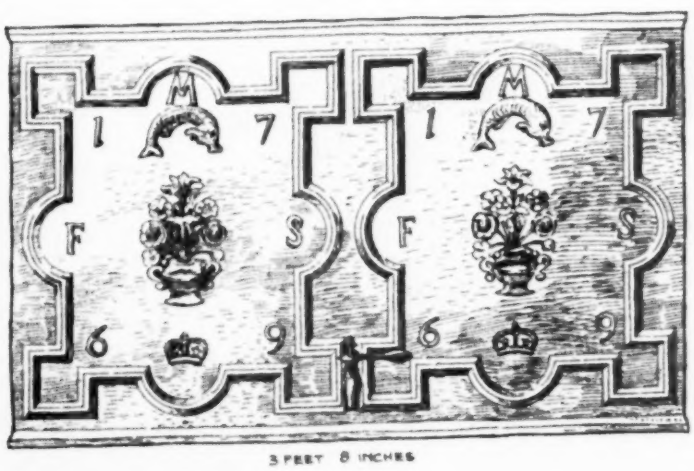
THE FIGURES ARE EMBLEMATICAL OF THE FOUR SEASONS



2 FEET 6½ INCHES

4 FEET 2 INCHES

1 FOOT 8½ INCHES



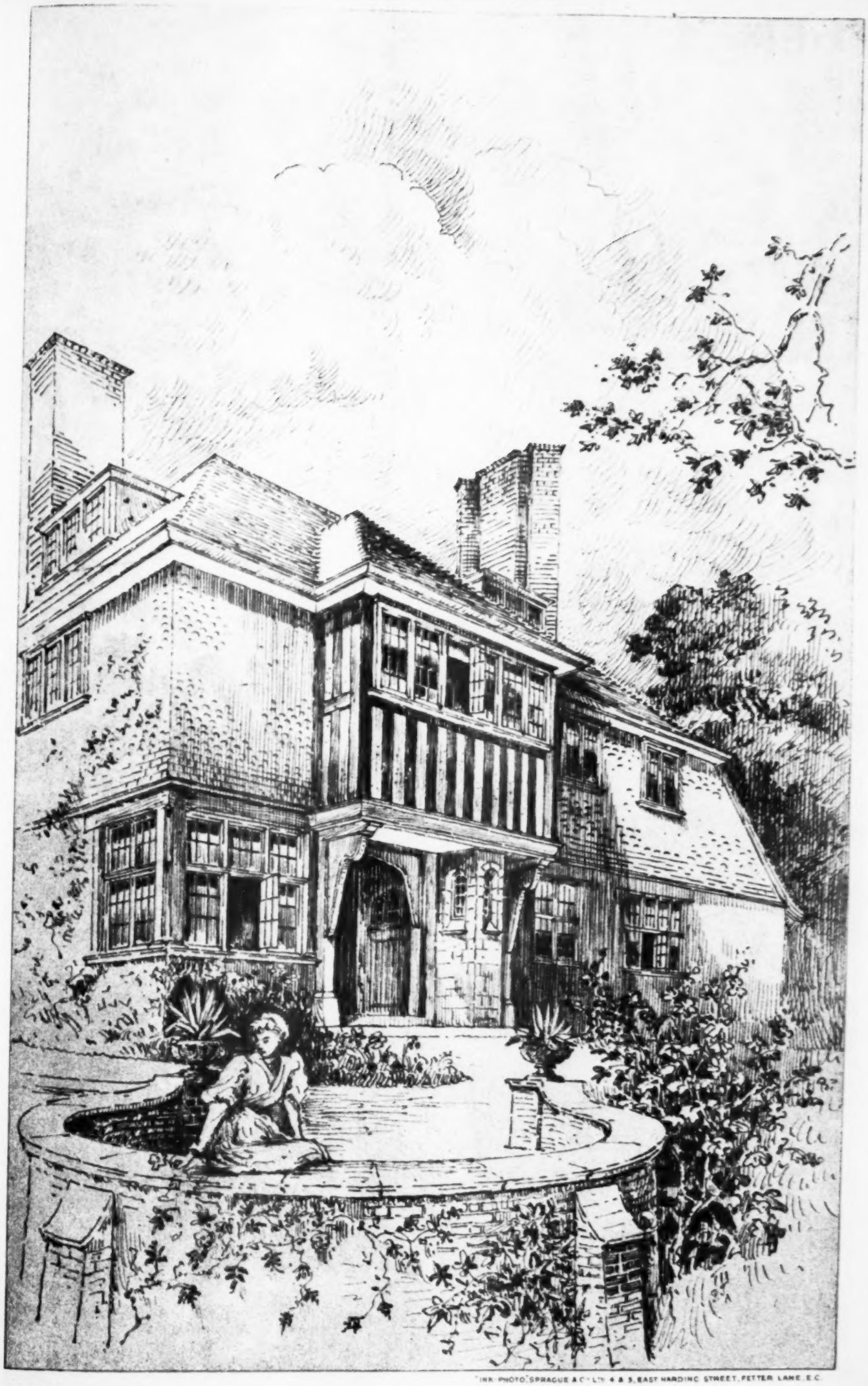
2 FEET 3 INCHES

3 FEET 8 INCHES

1 FOOT 10 INCHES

J. DAVIDSON, DEL.

PHOTO-LITHO. SPRAGUE & Cº LTº 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.



"INK-PHOTO" SPRAGUE & CO., LTD., 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

"WOOD RISING," RYE, SUSSEX.—Mr. Philip Tree, F.R.I.B.A., Architect.

lead to injury to life and property by fire. He hoped the efforts of the Committee would be to show that non-combustible materials or slow combustible materials were not so expensive as people thought them to be. He trusted they would recognise that from this time forward no combustible floors ought under any circumstances to be constructed in the metropolis or in any place where injury and risk to life and property could arise. He had himself found in the construction of artisans' dwellings, with which he had been largely connected, it was quite unwise and quite unnecessary on the ground of cheapness to construct combustible floors. Steel and various kinds of concrete were at their disposal to prevent the construction of combustible floors. At the same time, he felt it would be almost childish to prevent a man building a combustible house while they left the hundreds of thousands of houses already built in a dangerous condition, they would simply be trifling with the matter if they limited themselves to the construction of new buildings. He fervently hoped that the precedent set by the Factory and Workshops Act and in regard to theatres would be followed, and that in the case of all buildings under reasonable circumstances and in a reasonable time, they should insist on those responsible for them bringing them into line.

Sir H. Perrott, Bart., supported the exhibition from the point of view of the ambulance service.

Mr. P. Cremieu-Javal (chairman of the executive of the International Fire Exhibition) in proposing a vote of thanks to the Duke of Cambridge, mentioned that promises of support had been received from America, Russia, France, Germany, and other countries.

The Duke of Cambridge, in reply, remarked that the subject was one which required great attention, and should be dealt with speedily because, unfortunately, serious fires were occurring almost daily.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir J. McDougall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Stepney Borough Council 6,000*l.* for buildings for storage of plant; and Fulham Borough Council 3,200*l.* for purchase of freehold interest in depôt.

Vauxhall Bridge.—The following adjourned report of the Bridges Committee gave rise to considerable discussion :—

"The question of the rebuilding of Vauxhall Bridge has been before the Council for the last twelve years, although it was not until 1895 that Parliamentary powers were obtained to undertake the reconstruction. After the passing of the Vauxhall Bridge Act, some three years elapsed before the contract for the demolition of the old structure and partial construction of the new piers and abutments was let to Messrs. Pethick. The Council will remember that the proposal in 1897 was to construct a five-arched steel bridge with granite-faced piers and abutments, but that when the sketch was submitted it was rejected upon the grounds that it did not possess those features which it was thought a crossing of such importance should exhibit. Some eighteen months later, as the result of much deliberation a design was submitted and adopted by the Council showing a granite bridge backed with concrete, which not only had an appearance of stability and massiveness but which, it was believed, gave general satisfaction. Having regard, therefore, to the time and talent which had been spent upon the design and proposed construction of the bridge in a manner which has been regarded as so satisfactory, and which would have embodied the principle upon which the Thames embankments were constructed, we greatly regret to find that circumstances have arisen which will necessitate the Council having to revert to its original conception, and build a steel bridge with stone piers.

By section 37 (2) of the Vauxhall Bridge Act, it is provided that 'the temporary works in the river in connexion with the said bridges and the taking down and removal of the existing Vauxhall Bridge and the temporary bridge aforesaid shall be executed and performed to the reasonable satisfaction of the engineer for the time being of the Conservators, so that the traffic of the river shall not be interfered with more than may be absolutely necessary: provided that there shall at all times *during the construction* of the new Vauxhall Bridge be at the site thereof at least three openings, each having a clear waterway of 70 ft. in width, and one of such openings having a clear headway of 18 ft. and the others of such openings having respectively clear headways of 15 ft. above Trinity high water mark.' In 1898, when a concrete bridge was substituted for the original form of construction it was pointed out that the headway of the arches, owing to the centreing required for the support of the concrete arch during construction, would have to be temporarily reduced, and a clause authorising the lowering was accordingly inserted in the General Powers Bill of that session, but was subsequently withdrawn, as it was represented to us that a method of construction had been discovered which would obviate the temporary headways at the centre of the arches being less than the prescribed 18 ft. and 15 ft. Accordingly, in the following year a scheme for carrying out the work, showing headways respectively of 18 ft. and 15 ft. at the centre of the openings and lessening on each side towards the piers, were submitted to the Thames Conservancy Board, and received general approval. The question as to whether the headways referred to in the above clause are to be 18 ft. and 15 ft. throughout the whole width of the waterways has since been raised by reason of the result of an action which Messrs. Pethick brought against the owners of the tug *Frank* for damage done to the protective works at the bridge. The decision of the Admiralty Court, which was endorsed by the Court of Appeal, was given against Messrs. Pethick, solely upon the ground that the waterways were not at the time of the accident of the width specified in the Act. It was stated that, whilst the owners of the tug were guilty of negligence, there was no protection to the contractors from the fact that the openings had been approved by the Thames Conservancy Board. It will be observed that the importance to the Council of the decision lies in the fact that, although the width of the waterway was the only matter touched upon, any variation from the headway specified in the Act might equally, when the arches were in course of construction, be regarded as legal negligence on the part of the Council. Having regard therefore, to the fact that, acting in accordance with a plan sanctioned by the Thames Conservancy Board, Messrs. Pethick were guilty of legal negligence in deviating from terms of clause 37 (2) of the Act, we directed the solicitor to obtain counsel's opinion in the matter of the headways. The opinion is that the headways to the three openings shown upon the plan submitted in 1899 to the Conservancy Board do not comply with Clause 37 (2) of the Act. These openings, it is pointed out, are for navigation purposes, and must be 70 ft. wide and have a 'clear headway' of 18 ft. and 15 ft. respectively throughout the whole width of 70 ft. Such being the case, the Engineer has reported to us that he cannot carry out the construction of a concrete bridge to allow of this. To obtain the required depth for centreing, and at the same time to give the clear headway, would necessitate the arch of the bridge being raised 6 ft., the maximum upward deviation allowed by the Act being only 3 ft. He has further pointed out that, in the construction of a concrete arch bridge, it is absolutely essential that the centres should be much more solid and much less liable to any movement than is necessary in the case of a stone bridge, and for this reason alone he considers the upward deviation insufficient to give room for the satisfactory centreing of a concrete arch. If this were obtained, the gradient would have to be altered from 1 in 40 to 1 in 32·5, which we consider excessive.

It appears, therefore, that whilst the Thames Conservancy Board are empowered under Clause 37 (1) to consent to alterations in the number of openings, the height of the headway of the centre opening at crown, and also the span of the centre opening as regards the new Vauxhall Bridge, they have no power to sanction any variation from the works specified under Section 37 (2).

According to present arrangements the Council will in all probability be in a position to let the contract for the superstructure in the early part of next year. We have lost no time in having had prepared designs of the only type of bridge, viz., a steel one, which, under the circumstances, we could recommend the Council to construct. The erection of a steel bridge faced with granite has received our careful consideration, but has been abandoned for the following reasons—(1) the difficulty in tying both kinds of work together and of meeting the effects of expansion, which is different in the respective materials; (2) that the cost of a bridge of this kind would approximately exceed by 45,000*l.* that of one wholly made of steel; (3) that the weight of the superstructure, and consequently the pressure on the foundations, would be increased, which, in this particular instance, it is desirable should be kept as low as possible. The elevation which we consider shows the most satisfactory bridge is that for a superstructure to be wholly constructed of steel with elliptical arches and with ornamental facings. The cost for engineering works of such a structure, including the approaches, is estimated at 170,000*l.*, making, with the amount already voted, about 350,000*l.*

We have had hung up in the chamber the design of the bridge which, in our opinion, the Council would do well to adopt as being satisfactory in appearance and not unworthy of the position it will occupy. The Council will appreciate the importance of an early decision in the matter so as to avoid any interval arising between the termination of the existing contract and the letting of one in respect of the superstructure, not only with a view to meeting the demands of the traffic, but also to afford the earliest opportunity of connecting the existing lines of tramway upon each side of the bridge. . . . . We recommend—

(*a*) That the resolution of the Council of February 22, 1898, directing that the new Vauxhall bridge be a granite bridge backed with concrete be rescinded.

(*b*) That the estimate of 170,000*l.* submitted by the Finance Committee for the building of the superstructure of the new Vauxhall Bridge be approved, and than an expenditure up to the amount be sanctioned; that the design submitted showing a steel elliptical arch structure be adopted, and that the engineer be instructed to prepare the necessary contract, plans and specification. . . ."

Lord Monkswell, on behalf of the General Purposes Committee, asked that the Chairman of the Committee should take the Report back with a view to giving the Council further information as to the reasons which induced them to recommend the substitution of a steel for a granite bridge. The reason given was that the plans as originally proposed for a granite bridge would not comply with the Act of Parliament; but he understood that, even if Parliament was induced to reconsider the Act, the Bridges Committee would not have a granite bridge.

Mr. Sears (of the Bridges Committee) said the matter had been carefully considered by the Committee, and they had come to the decision they had with very great regret. There were two grounds upon which the decision of the Committee had been arrived at. The first was that stated by Lord Monkswell; but there was a more material reason, viz., the difficulty with regard to the foundations. When the original borings were taken, the engineers thought they would have arrived on hard blue clay, and then they would have been able to have got sufficiently strong foundations for carrying a heavy granite bridge. It had now been discovered that the clay was of a softer nature than expected, and could not carry the weight, and it was too late now to make alterations and increase the width of the foundations in order to carry a heavier bridge. The present Engineer was not responsible for this, but they had to act entirely on the advice of their present Engineers. The opposition arose entirely from artists, who believed the design of the bridge would not be so artistic as one constructed of granite. He quite agreed that granite would be better than steel, but that was not to say that a steel bridge was not capable of artistic treatment. They had only a first sketch of the bridge before them, and the details of the ornamentation had to be considered, and their Engineer was prepared to consult with the architects of the Council with regard to the artistic finish of the bridge. What they had to consider was that the Engineer refused to construct a heavy granite bridge on the piers in the river.

Mr. Henry Ward said he thought that the Council should be taken a little more into the confidence of the Committee on one or two points. Some architects thought that an architect should be associated with the Council's Engineer in order to produce a joint design and to satisfy all parties. There was only one case in which that had been done in the erection of a bridge over the Thames, and that was in the case of the Tower Bridge, and no recent work had been more subjected to the criticism of architects than that bridge. Dual control or responsibility nearly always led to failure. Four or five years ago a deputation from the Royal Institute of British Architects came before the then Bridges Committee and made two complaints, one in reference to the design of Vauxhall Bridge as then settled, and the other as to the colour the various iron bridges under the control of the Council were painted. Mr. Alfred Waterhouse, speaking for the deputation, said it was a mistake to paint the iron bridges across the Thames in any bright colour; the dull, leaden sky of London required a neutral tint or a dull, grey colour to harmonise. Even while Mr. Waterhouse spoke there were murmurs of dissent on the part of some of the members of the deputation, but the Committee asked the deputation to say what colour they would advise for painting two of the bridges about to be dealt with. The deputation promised to send, and did send, samples of the colour which they suggested should be tried on various panels of

Albert Bridge. The panels were accordingly so painted, but though the deputation inspected the panels, the Bridge Committee were unable to get any answer for some time. Finally, in reply to an application for a decision, the Bridge Committee were informed that the deputation differed so much in opinion amongst themselves that the Bridges Committee had better follow out their own ideas. The deputation was asked to give some idea of the design they proposed for Vauxhall Bridge, and the gentleman in charge said the first thing he thought was that the architectural treatment required that the piers should be considerably increased in width beyond what the Engineer proposed—the slender piers of Westminster Bridge being inartistic. That was put before them, although old Vauxhall Bridge was pulled down partly because the piers were so wide that it was difficult to navigate craft against the currents caused by the old broad piers and narrow openings. That was a sample of the ideas the architects had to put before them. The utilitarian aspect of the question had to be considered before any other—the question of erecting a bridge across the river with a flat suitable gradient for road traffic above, and with slender piers which would not interfere with the river traffic below. The case of London Bridge had been mentioned as a suitable bridge for Vauxhall, but any one who knew the south gradient there would know how great the strain was on horses in pulling a load up from Tooley-street. Waterloo Bridge, too, had been referred to — and one could not help agreeing that Waterloo Bridge was an excellent one, but again the question of gradients made it impossible to have a bridge like that at Vauxhall, where it was necessary to connect with the level of the embankment. The utilitarian side of the matter should be considered first, and the artistic side should have immediate attention after utilitarian requirements had been dealt with. He did not think Westminster Bridge was the ugly bridge that some architects thought it, and certainly its flat gradients made it very easy for road traffic. Apparently the only thing that was objected to in the design of the Engineer was the ornamentation, but that was a very small thing; it had not been fully considered, and no doubt necessary alterations could be made in that respect. A recent writer considered the curve of the arches of the bridge graceful, but proposed that the ornamentation should be altered so as to produce a more artistic bridge. The Council also had to consider its Engineer. Two eminent engineers had designed bridges for the Council and they had both been objected to. Sir Alexander Binnie designed a concrete bridge, but the foundations had been found to be unsuitable. The Committee wished to stand loyally by its officers, but at the same time they wished to take advantage of artistic recommendations and the present Engineer was willing to consult with the Architect of the Council. The segmental arch design for the bridge had not been put before the Council before that week, because the Committee thought that the elliptical design would be better.

Mr. Straus was of opinion that the foundation question settled the whole matter. If they had a body composed of the most artistic designers in the world they would never get them to agree. The Engineer had no objection to altering the filagree work of the design, but he objected to having an architect foisted upon him to assist in designing the bridge. Their Engineer was a competent man, and he should either be left to do the work himself or have nothing to do with it at all. A more beautiful bridge might, perhaps, be erected than the one proposed, but it would be at the cost of the poor horses, and that was as undesirable as that the design should suffer.

Mr. Beachcroft moved that the Report be referred back. He asked what they had been doing for five and a half years, if at the end of that time they suddenly found they were mistaken in the composition of the bed of the river. No other municipal body in the world would, *sub silentio*, allow the matter to pass without the fullest information. The statement made by Mr. Ward would not satisfy. The Engineer, they were told, had agreed to consult the Architect of the Council as to the architectural features, and that fact showed that grounds existed for the outside criticisms. The Report of the Committee was totally inadequate.

Mr. R. A. Robinson seconded the amendment.

Mr. Burns, M.P., said Mr. Beachcroft had been influenced by outside criticism, which was undeserved and unfounded. The delay was owing to the contractor and the Thames Conservancy. He knew no body which had deferred more to artistic opinion than the Council. They had listened too frequently with bated breath to the views of so-called culture, and whenever they departed from their primitive common sense and abandoned their own ideas of what was beautiful, either in bridges or parks, at the instance of artists, it always led them into a bog of difficulties and entanglements infinitely worse than they were moved to adopt before they consulted artists. The City Corporation had been but faintly criticised for interfering with London Bridge, which was a beautiful structure. In his opinion the City Corporation had laid violent hands on the bridge in carrying out the present widening. But then the Corporation was 700 years old, and it could steal a regiment of horses while the County Council could not look over the hedge. He appreciated Sir William Richmond as an artist, and in his work in trying to make London more healthy and comfortable, but Sir William had taken up a bad case. He had heard with pain and regret, as an old member of the Bridges Committee, that they were to have a granite and concrete bridge, but he gave a sigh of relief when he found that, owing to the levels, &c., the bridge was to be of steel. No country in the world could show such splendid combinations of granite and iron, of granite and steel, for bridges as this country. As an instance of a beautiful structure of the kind, he would mention Westminster Bridge. They all followed Page's beautiful design for the bridge, and he had never heard an artist give an adverse opinion on that, and there had not been an iron or steel bridge built on the Thames, and many other rivers, that had not taken Page's design in the rough where physical reasons would allow. Vauxhall Bridge, making allowance for difference of levels, &c., was practically a replica of Page's Westminster Bridge. Some one said, "Look at the niggling decoration." The same could be said of the spandrels of Page's bridge, and the same people who said that praised the new Pont Alexandre III. Bridge in Paris, and held it up as a model for the Council to follow. But for the levels, he would have liked to see a bridge like Waterloo Bridge put up at Vauxhall. Waterloo Bridge ought to be a model for every bridge over the river.

Mr. W. Emden said architects were not the proper persons to be called in to design bridges—it was not their proper province. It was a question for an engineer. This was just one of those questions of taste *v.* utility. There were a number of people who thought they could postpone everything on the ground of taste. The deputation from the Institute of Architects, when they saw the difficulties the Council were faced with, were quite willing to reconsider the matter; their view previously had been based on insufficient information. Westminster Bridge was an example of what could be done in steel; the bridge was one of the best in London.

Mr. W. H. Dickinson said it ought to be made very clear to the public that the Council could not build a granite bridge. He thought that, even if the Engineer had secured the best design, the Council should be given further time to consider it.

Mr. Wightman appealed to the Council to get on with the bridge, and let architects and artists take a back seat.

Mr. S. Collins and Mr. Parkinson supported the Committee's recommendation.

The amendment was then rejected, and the recommendations agreed to.

Telephones.—The adjourned Report of the Establishment Committee dealing with the telephone arrangements at the central offices was submitted. It was recommended that the offer of the National Telephone Company to provide additional telephones and lines, &c., for 327*l.* 15*s.* be accepted.

Mr. W. H. Dickinson moved that the Report be referred back, and said that, having regard to what had taken place at Tunbridge Wells, they ought to be very careful before giving business to the Company in preference to the Government.

Mr. Radford seconded the amendment, on the ground that he wished to encourage the enterprise of his Majesty's Government.

The amendment was carried, on a division, by 65 votes to 35.

Differential Rating.—On the recommendation of the Local Government and Taxation Committee, it was agreed that in the opinion of the Council a system of graduated rate, according to the amount of rateable value, could not be advantageously adopted in London.

The Housing Question.—A lengthy Report was submitted by the Housing of the Working Classes Committee on the Report of the Joint Committee of Parliament, which sat this year to consider the revision of the Standing Orders of Parliament requiring the insertion in Private Bills of clauses providing for the rehousing of persons of the working classes displaced in pursuance of the powers conferred by those Bills upon their promoters.

Mr. Beachcroft drew attention to the fact that the proposed Model Clause would give the Secretary of State power to fix rents. He thought there should also be power conferred on the Secretary of State to prescribe the class of persons who should occupy the dwellings. He also considered that the Council should push forward the subject of the Council having power to agree with railway companies to relieve them of their obligations to rehouse.

Sir W. J. Collins (Chairman of the Committee) said that while the Model Clause would, on the one hand, tend to bring the obligations of railway companies more closely home to them, on the other hand it gave greater elasticity to the Secretary of State.

Improvements.—The following recommendations of the Improvements Committee were agreed to:—

"That the estimate of 2,500*l.* submitted by the Finance Committee be approved, and that the Improvements Committee be authorised to take the necessary steps to secure, upon the terms named in the foregoing Report of the Committee, the widening of Burntwood-lane, Wandsworth, to 54 ft., at the Magdalen College Estate, the Wandsworth Borough Council having agreed to make a contribution of one-third of the net cost, or a contribution of 833*l.* if the net cost exceeds 2,500*l.*

That the estimate of 440*l.* submitted by the Finance Committee be approved, and that, subject to the Council approving the surrender of the portion of Wimbledon-buildings needed for the widening of Newton-street to 30 ft., a contribution be made by the Council, on the usual conditions, of half the net cost of the improvement proposed to be undertaken by the Council of the Metropolitan Borough of Holborn, provided however that if the ultimate net cost of the improvement exceeds 880*l.*, the Council's contribution will be limited to 440*l.*"

The Council adjourned at 7.30 p.m.

COMPETITIONS.

New Central Reference Library, Bristol.—Mr. E. W. Mountford, the assessor, has made his award in this competition. Premiums were awarded as follows:—1st, Mr. H. Percy Adams, 28, Woburn-place, Russell-square, W.C., 2nd, Messrs. Knott & Collins, 66, Oakley-street, Chelsea; 3rd, Mr. A. T. Butler, Cradley Heath.

Hospital, Strood.—In the competition for Infectious Hospital, Strood, the first premiated design was sent in by Mr. E. Godfrey Page, A.R.I.B.A., 4 and 5, Warwick-court, Gray's Inn, London, W.C.

Workmen's Houses, Liverpool.—A special meeting of the Housing Committee of Liverpool Corporation was held on the 21st inst. to consider the designs, forty-five in number, submitted by architects of houses for the working classes to be built on the Hornby-street area. The report of the assessor, Mr. T. Blashill, was considered, and the Committee, upon his recommendations, made the following awards:—First premium, 250*l.*, Mr. Jas. Dod, Exchange-buildings, Liverpool; second, 150*l.*, Messrs. Brocklesby, Marchment, & East, Merton, Surrey; third, 100*l.*, Mr. A. Mitchell Torrance, London; commended, Mr. H. A. Matear and Messrs. Worthington, Simon, & Crawford, Manchester; fifth, Messrs. Spinks & M'Jarrow, London; sixth, Messrs. Grover, Halford, & Cutler, London.

Italian Asphalt.—According to a Report just received at the Foreign Office from Mr. Tomassini, British Vice-Consul at Ancona, the exports of asphalt from that port are continually on the increase. In 1901 over 15,000 tons were exported to Germany, the United States, Egypt, and Greece, whilst 3,000 tons of crushed asphalt in bags were exported to London to be transhipped for Auckland, New Zealand.

ARCHITECTURAL SOCIETIES

THE EDINBURGH ARCHITECTURAL ASSOCIATION.—The Associate section of this Association held their first ordinary meeting in the Rooms, 117, George-street, on Wednesday evening last week. Mr. J. Douglas Trail occupied the chair, and Mr. John Wilson read a paper on the "Palace of Versailles." Treating the paper from an historical, as well as an architectural, standpoint, Mr. Wilson showed how intimately the Palace and its surroundings were linked with the three Louis, XIV., XV., and XVI., and gave interesting descriptions, from personal notes, of the various apartments comprising this fine example of French Renaissance to which is often compared part of Hampton Court. The lecturer drew special attention to the chapel; the State-rooms, with their marble mosaic-covered walls and richly-painted ceilings; the glass gallery; the Queen's staircase; Louis XIV's. bedroom, and the Grand and Petit Trianons, the latter of which was inhabited latterly by Marie Antoinette. Mr. Wilson gave interesting descriptions of the gardens of the Palace with their wondrous bronzes and marble. The lecture was illustrated by an excellent series of limelight illustrations. A discussion followed.

ULSTER SOCIETY OF ARCHITECTS.—The fortnightly meeting of the Designing Club of this Society was held in the Rooms, 16, High-street, on the 17th inst., Mr. W. J. Gilliland, M.R.I.A.I. (Vice-President), in the chair. The subject for the evening was a paper by Mr. W. J. Fennell, entitled "Brief Notes on Old Buildings in Antrim and Down." The lecture was illustrated by a collection of lantern slides from photographs taken mainly by Mr. Fennell himself. In the course of his paper, the lecturer said the nearest "old building" to Belfast is the diminutive ruin at Holywood, in the County of Down, which is all that remains of the once extensive monastery of the Franciscans "founded by John Whyte in the year 1200, and which flourished till the dissolution." This little church showed some well-constructed windows as far as their internal jambs were concerned, and a trefoil-headed piscina, with one or two dog-tooth ornaments, remained to show what it once was like. It had no other feature of interest, and, small as those remains were, it was something to know that they were now carefully preserved. The chief object of interest in the town of Newtownards was the building known as the "Old Church." This ancient edifice mainly consisted of the original church belonging to the Priory of St. Columba, the only existing portion erected in post-Reformation times being the tower. About twenty minutes' walk from Newtownards in a north-easterly direction brought them to the ancient Church of Movilla, one of the oldest foundations in Ireland. Referring to Greyabbey, the lecturer said the ruins constituted the most important remains of a monastic establishment in either Antrim or Down. The Cistercians were the great master farmers of the time they lived in, and their influence for good was great and far-reaching. That abbey, like most others, grew to be of great political importance, and also became possessed of townland after townland until its wealth was great and enviable. It was suppressed about 1530, and, passing from one owner to another, it was at last sold by Lord Dufferin to the Montgomerys, who now care for it very tenderly in its old age. He might assume that they were all acquainted with the history of that great Order, and how the monks were supposed to carry the severity of their lives into the details of everything round them, but he might remind them, when they were wondering where the detail was, and looking for elaborate mouldings, gracefully-clustered columns, and stony verdure, that the rules of the Order prohibited most of these, demanding only the simplest forms in everything as a protest against luxury and sin. After referring to Downpatrick and Inch Abbey, the lecturer alluded to the old buildings in County Antrim, beginning with the little-known and seldom-visited remains of the chapter house of the White Abbey. Continuing, he said they reached the historic town of Carrickfergus, entering the ancient town by its old gate. This was once the key to the north-east of Ireland, and, in consequence, did not always enjoy an uninterrupted dream of peace and tranquillity. De Lacy, another Norman adventurer, selected it as his point of advantage, walled in the town, and built the castle there on a basaltic dyke. It was a fine example of castle building, boldly designed and skilfully placed, and bore an unbroken record of occupation from its foundation to the present time. Amongst other Antrim old buildings, the lecturer called attention to the picturesquely-placed stronghold of the M'Donnell's, Dunluce Castle. Viewed from the east, that castle always reminded him of Mark's fabled one in Tintagel—"half in sea and high on land, a crown of towers." He concluded by making a strong plea for the preservation of those old buildings.—A vote of thanks was passed, on the motion of Mr. Maxwell, seconded by Mr. Donnelly, and the meeting concluded.—*Northern Whig.*

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Correspondence.

DESTRUCTION OF THE EXE BRIDGE.

SIR,—Your pages have always been open to protests against the needless destruction of the architectural works of the past, and perhaps you will allow me to call attention to a particularly reckless example of such vandalism now proposed.

During a few days' visit to Exeter I find that the Town Council *have decided* to pull down the "Exe Bridge," a fine stone bridge in perfect condition and of ample width of way; and to substitute for it a straight girder of iron for which, I am informed, plans and estimates are already prepared. I append a history of the existing stone structure, as obtained from the local records. But what I would call attention to is the plea put forward for this wanton and extravagant act of folly. It is solely that "the gradients are too steep."

I forward with this letter a photograph, which will enable you to judge of the value of the reason given.

The really sharp gradient in connexion with the bridge is in the approach from the west—*i.e.*, the side furthest from the city—which could be remedied without touching the bridge, as the Fore-street, by which it is approached on the city side, is a steep incline leading downwards from the plateau on which the cathedral stands. Any lowering of the "take off" on that side means adding so much to the hill to be surmounted. Perhaps the intelligence of the body to which this beautiful city is entrusted may be guaged by the fact that last year they whitewashed, or yellow-washed, the fine, time-stained stone front of the old Guildhall, which is the most picturesque feature of the beautiful High-street of Exeter.

It seems little short of disastrous that the buildings which so often constitute the charm of our historic cities should be at the mercy of ignorant men, incapable of appreciating the beauty on the destruction of which they are only too ready to spend large sums of borrowed money. J. D. CRACE.

*** The gradient of the bridge, from a photograph sent to us by Mr. Crace, appears to be about 1 in 10, which is certainly a very heavy gradient for modern traffic; but the bridge is a very short one, and in consideration of what Mr. Crace says as to the long gradient of the road leading to it, we should think it might very well be left to live its life out. It is a very picturesque object, like most of our old stone bridges, and the substitution of a straight iron girder would ruin the look of the place. If it were even necessary to take it down, it could be rebuilt as a stone arched bridge with a lower arch in the centre. We quite agree that the proposal to substitute a girder is lamentable.

The following is the short history of the bridge sent by Mr. Crace with his letter:—

"The existing Exe Bridge, of three segmental arches, was designed by Joseph Dixon, architect, of Westminster, in 1770. The first attempt at its construction seems to have been made without due caution, for the work was well advanced when it was carried away by heavy floods in January, 1775. The care of the work was then given to John Goodwin, an assistant of Dixon's, who turned the stream by dams and obtained footing on the solid rock. The first stone of this second attempt was laid on July 15, 1776. The exact date of its opening is not recorded, but it is said to have been in use by March, 1778, and has remained unshaken to this day."

Albert Bridge. The panels were accordingly so painted, but though the deputation inspected the panels, the Bridge Committee were unable to get any answer for some time. Finally, in reply to an application for a decision, the Bridge Committee were informed that the deputation differed so much in opinion amongst themselves that the Bridges Committee had better follow out their own ideas. The deputation was asked to give some idea of the design they proposed for Vauxhall Bridge, and the gentleman in charge said the first thing he thought was that the architectural treatment required that the piers should be considerably increased in width beyond what the Engineer proposed—the slender piers of Westminster Bridge being inartistic. That was put before them, although old Vauxhall Bridge was pulled down partly because the piers were so wide that it was difficult to navigate craft against the currents caused by the old broad piers and narrow openings. That was a sample of the ideas the architects had to put before them. The utilitarian aspect of the question had to be considered before any other—the question of erecting a bridge across the river with a flat suitable gradient for road traffic above, and with slender piers which would not interfere with the river traffic below. The case of London Bridge had been mentioned as a suitable bridge for Vauxhall, but any one who knew the south gradient there would know how great the strain was on horses in pulling a load up from Tooley-street. Waterloo Bridge, too, had been referred to — and one could not help agreeing that Waterloo Bridge was an excellent one, but again the question of gradients made it impossible to have a bridge like that at Vauxhall, where it was necessary to connect with the level of the embankment. The utilitarian side of the matter should be considered first, and the artistic side should have immediate attention after utilitarian requirements had been dealt with. He did not think Westminster Bridge was the ugly bridge that some architects thought it, and certainly its flat gradients made it very easy for road traffic. Apparently the only thing that was objected to in the design of the Engineer was the ornamentation, but that was a very small thing; it had not been fully considered, and no doubt necessary alterations could be made in that respect. A recent writer considered the curve of the arches of the bridge graceful, but proposed that the ornamentation should be altered so as to produce a more artistic bridge. The Council also had to consider its Engineer. Two eminent engineers had designed bridges for the Council and they had both been objected to. Sir Alexander Binnie designed a concrete bridge, but the foundations had been found to be unsuitable. The Committee wished to stand loyally by its officers, but at the same time they wished to take advantage of artistic recommendations and the present Engineer was willing to consult with the Architect of the Council. The segmental arch design for the bridge had not been put before the Council before that week, because the Committee thought that the elliptical design would be better.

Mr. Straus was of opinion that the foundation question settled the whole matter. If they had a body composed of the most artistic designers in the world they would never get them to agree. The Engineer had no objection to altering the filagree work of the design, but he objected to having an architect foisted upon him to assist in designing the bridge. Their Engineer was a competent man, and he should either be left to do the work himself or have nothing to do with it at all. A more beautiful bridge might, perhaps, be erected than the one proposed, but it would be at the cost of the poor horses, and that was as undesirable as that the design should suffer.

Mr. Beachcroft moved that the Report be referred back. He asked what they had been doing for five and a half years, if at the end of that time they suddenly found they were mistaken in the composition of the bed of the river. No other municipal body in the world would, *sub silentio*, allow the matter to pass without the fullest information. The statement made by Mr. Ward would not satisfy. The Engineer, they were told, had agreed to consult the Architect of the Council as to the architectural features, and that fact showed that grounds existed for the outside criticisms. The Report of the Committee was totally inadequate.

Mr. R. A. Robinson seconded the amendment.

Mr. Burns, M.P., said Mr. Beachcroft had been influenced by outside criticism, which was undeserved and unfounded. The delay was owing to the contractor and the Thames Conservancy. He knew no body which had deferred more to artistic opinion than the Council. They had listened too frequently with bated breath to the views of so-called culture, and whenever they departed from their primitive common sense and abandoned their own ideas of what was beautiful, either in bridges or parks, at the instance of artists, it always led them into a bog of difficulties and entanglements infinitely worse than they were moved to adopt before they consulted artists. The City Corporation had been but faintly criticised for interfering with London Bridge, which was a beautiful structure. In his opinion the City Corporation had laid violent hands on the bridge in carrying out the present widening. But then the Corporation was 700 years old, and it could steal a regiment of horses while the County Council could not look over the hedge. He appreciated Sir William Richmond as an artist, and in his work in trying to make London more healthy and comfortable, but Sir William had taken up a bad case. He had heard with pain and regret, as an old member of the Bridges Committee, that they were to have a granite and concrete bridge, but he gave a sigh of relief when he found that, owing to the levels, &c., the bridge was to be of steel. No country in the world could show such splendid combinations of granite and iron, of granite and steel, for bridges as this country. As an instance of a beautiful structure of the kind, he would mention Westminster Bridge. They all followed Page's beautiful design for the bridge, and he had never heard an artist give an adverse opinion on that, and there had not been an iron or steel bridge built on the Thames, and many other rivers, that had not taken Page's design in the rough where physical reasons would allow. Vauxhall Bridge, making allowance for difference of levels, &c., was practically a replica of Page's Westminster Bridge. Some one said, "Look at the niggling decoration." The same could be said of the spandrels of Page's bridge, and the same people who said that praised the new Pont Alexandre III. Bridge in Paris, and held it up as a model for the Council to follow. But for the levels, he would have liked to see a bridge like Waterloo Bridge put up at Vauxhall. Waterloo Bridge ought to be a model for every bridge over the river.

Mr. W. Emden said architects were not the proper persons to be called in to design bridges—it was not their proper province. It was a question for an engineer. This was just one of those questions of taste *v.* utility. There were a number of people who thought they could postpone everything on the ground of taste. The deputation from the Institute of Architects, when they saw the difficulties the Council were faced with, were quite willing to reconsider the matter; their view previously had been based on insufficient information. Westminster Bridge was an example of what could be done in steel; the bridge was one of the best in London.

Mr. W. H. Dickinson said it ought to be made very clear to the public that the Council could not build a granite bridge. He thought that, even if the Engineer had secured the best design, the Council should be given further time to consider it.

Mr. Wightman appealed to the Council to get on with the bridge, and let architects and artists take a back seat.

Mr. S. Collins and Mr. Parkinson supported the Committee's recommendation.

The amendment was then rejected, and the recommendations agreed to.

Telephones.—The adjourned Report of the Establishment Committee dealing with the telephone arrangements at the central offices was submitted. It was recommended that the offer of the National Telephone Company to provide additional telephones and lines, &c., for 327*l.* 15*s.* be accepted.

Mr. W. H. Dickinson moved that the Report be referred back, and said that, having regard to what had taken place at Tunbridge Wells, they ought to be very careful before giving business to the Company in preference to the Government.

Mr. Radford seconded the amendment, on the ground that he wished to encourage the enterprise of his Majesty's Government.

The amendment was carried, on a division, by 65 votes to 35.

Differential Rating.—On the recommendation of the Local Government and Taxation Committee, it was agreed that in the opinion of the Council a system of graduated rate, according to the amount of rateable value, could not be advantageously adopted in London.

The Housing Question.—A lengthy Report was submitted by the Housing of the Working Classes Committee on the Report of the Joint Committee of Parliament, which sat this year to consider the revision of the Standing Orders of Parliament requiring the insertion in Private Bills of clauses providing for the rehousing of persons of the working classes displaced in pursuance of the powers conferred by those Bills upon their promoters.

Mr. Beachcroft drew attention to the fact that the proposed Model Clause would give the Secretary of State power to fix rents. He thought there should also be power conferred on the Secretary of State to prescribe the class of persons who should occupy the dwellings. He also considered that the Council should push forward the subject of the Council having power to agree with railway companies to relieve them of their obligations to rehouse.

Sir W. J. Collins (Chairman of the Committee) said that while the Model Clause would, on the one hand, tend to bring the obligations of railway companies more closely home to them, on the other hand it gave greater elasticity to the Secretary of State.

Improvements.—The following recommendations of the Improvements Committee were agreed to:—

"That the estimate of 2,500*l.* submitted by the Finance Committee be approved, and that the Improvements Committee be authorised to take the necessary steps to secure, upon the terms named in the foregoing Report of the Committee, the widening of Burntwood-lane, Wandsworth, to 54 ft., at the Magdalen College Estate, the Wandsworth Borough Council having agreed to make a contribution of one-third of the net cost, or a contribution of 833*l.* if the net cost exceeds 2,500*l.*

That the estimate of 440*l.* submitted by the Finance Committee be approved, and that, subject to the Council approving the surrender of the portion of Wimbledon-buildings needed for the widening of Newton-street to 30 ft., a contribution be made by the Council, on the usual conditions, of half the net cost of the improvement proposed to be undertaken by the Council of the Metropolitan Borough of Holborn, provided however that if the ultimate net cost of the improvement exceeds 880*l.*, the Council's contribution will be limited to 440*l.*"

The Council adjourned at 7.30 p.m.

COMPETITIONS.

New Central Reference Library, Bristol.—Mr. E. W. Mountford, the assessor, has made his award in this competition. Premiums were awarded as follows:—1st, Mr. H. Percy Adams, 28, Woburn-place, Russell-square, W.C.; 2nd, Messrs. Knott & Collins, 66, Oakley-street, Chelsea; 3rd, Mr. A. T. Butler, Cradley Heath.

Hospital, Strood.—In the competition for Infectious Hospital, Strood, the first premiated design was sent in by Mr. E. Godfrey Page, A.R.I.B.A., 4 and 5, Warwick-court, Gray's Inn, London, W.C.

Workmen's Houses, Liverpool.—A special meeting of the Housing Committee of Liverpool Corporation was held on the 21st inst. to consider the designs, forty-five in number, submitted by architects of houses for the working classes to be built on the Hornby-street area. The report of the assessor, Mr. T. Blashill, was considered, and the Committee, upon his recommendations, made the following awards:—First premium, 250*l.*, Mr. Jas. Dod, Exchange-buildings, Liverpool; second, 150*l.*, Messrs. Brocklesby, Marchment, & East, Merton, Surrey; third, 100*l.*, Mr. A. Mitchell Torrance, London; commended, Mr. H. A. Matear and Messrs. Worthington, Simon, & Crawford, Manchester; fifth, Messrs. Spinks & M'Jarrow, London; sixth, Messrs. Grover, Halford, & Cutler, London.

Italian Asphalt.—According to a Report just received at the Foreign Office from Mr. Tomassini, British Vice-Consul at Ancona, the exports of asphalt from that port are continually on the increase. In 1901 over 15,000 tons were exported to Germany, the United States, Egypt, and Greece, whilst 3,000 tons of crushed asphalt in bags were exported to London to be transhipped for Auckland, New Zealand.

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DESTRUCTION OF THE EXE BRIDGE.

SIR,—Your pages have always been open to protests against the needless destruction of the architectural works of the past, and perhaps you will allow me to call attention to a particularly reckless example of such vandalism now proposed.

During a few days' visit to Exeter I find that the Town Council *have decided* to pull down the "Exe Bridge," a fine stone bridge in perfect condition and of ample width of way; and to substitute for it a straight girder of iron for which, I am informed, plans and estimates are already prepared. I append a history of the existing stone structure, as obtained from the local records. But what I would call attention to is the plea put forward for this wanton and extravagant act of folly. It is solely that "the gradients are too steep."

I forward with this letter a photograph, which will enable you to judge of the value of the reason given.

The really sharp gradient in connexion with the bridge is in the approach from the west—*i.e.*, the side furthest from the city—which could be remedied without touching the bridge, as the Fore-street, by which it is approached on the city side, is a steep incline leading downwards from the plateau on which the cathedral stands. Any lowering of the "take off" on that side means adding so much to the hill to be surmounted. Perhaps the intelligence of the body to which this beautiful city is entrusted may be guaged by the fact that last year they whitewashed, or yellow-washed, the fine, time-stained stone front of the old Guildhall, which is the most picturesque feature of the beautiful High-street of Exeter.

It seems little short of disastrous that the buildings which so often constitute the charm of our historic cities should be at the mercy of ignorant men, incapable of appreciating the beauty on the destruction of which they are only too ready to spend large sums of borrowed money. J. D. CRACE.

*** The gradient of the bridge, from a photograph sent to us by Mr. Crace, appears to be about 1 in 10, which is certainly a very heavy gradient for modern traffic; but the bridge is a very short one, and in consideration of what Mr. Crace says as to the long gradient of the road leading to it, we should think it might very well be left to live its life out. It is a very picturesque object, like most of our old stone bridges, and the substitution of a straight iron girder would ruin the look of the place. If it were even necessary to take it down, it could be rebuilt as a stone arched bridge with a lower arch in the centre. We quite agree that the proposal to substitute a girder is lamentable.

The following is the short history of the bridge sent by Mr. Crace with his letter:—

"The existing Exe Bridge, of three segmental arches, was designed by Joseph Dixon, architect, of Westminster, in 1770. The first attempt at its construction seems to have been made without due caution, for the work was well advanced when it was carried away by heavy floods in January, 1775. The care of the work was then given to John Goodwin, an assistant of Dixon's, who turned the stream by dams and obtained footing on the solid rock. The first stone of this second attempt was laid on July 15, 1776. The exact date of its opening is not recorded, but it is said to have been in use by March, 1778, and has remained unshaken to this day."

CHEAP COTTAGES.

SIR,—Mr. Moody's letter in your last issue appears to me to solve the difficulty of building cheap cottages in rural districts, if a composition block can be obtained that is cheaper than brickwork, lighter in weight, durable, and of pleasing appearance.

The construction for the walls mentioned by G. R. M. in yours of 15th inst. would be as dear as a 9-in. wall plastered inside and could not compare for durability.

Will Mr. Moody give the name, price, and any other particulars of the composition blocks he quotes?

WALTER RICHARDS.

THE WALL PAINTINGS, CLAVERLEY CHURCH.

SIR,—A slight error has crept into the summary of my paper read at the Royal Archæological Institute on November 5, which appeared in your last issue.

Earl Roger de Montgomery is described, in connexion with my account of the wall paintings in Claverley Church, as having been Constable of the Castle of Bridgnorth. As a matter of fact, the castle was not in existence in his time, but was built by his son, Robert de Belesme, in 1102, Roger having died in 1094

This does not affect in any way the question of the subject and age of these remarkable wall paintings; but historical accuracy, even in little matters of fact, is worth aiming at, and induces me to trouble you with this correction.

PHILIP M. JOHNSTON.

"FENSTERLAIBUNG."

SIR,—In your issue of November 15, under "Magazines and Reviews," you mention the word "Fensterlaibung," which seems not to be known to you.

It may interest you to hear that "Laibung" is commonly used in the building line in Germany, and denotes the side of any window or door recess opening.

F. GREEN.

*** We are obliged to Mr. Green for his note, though his explanation does not exactly answer to the illustration referred to in the *Berliner Architektur-Welt*, which appears to represent a screen of some kind across a window-surface.

BOOKS RECEIVED.

EGYPT EXPLORATION FUND: Archæological Report for 1901-1902. Edited by F. Ll. Griffith. (Kegan Paul, Trench, Trübner & Co.)

OBITUARY.

MR. HICKS.—We regret to announce the death on the 21st inst., in his fifty-fourth year, of Mr. William Searle Hicks, of No. 3, Roseworth-villas, Gosforth, and senior partner of the firm of Messrs. Hicks & Charlewood, of No. 42, Grainger-street, Newcastle-on-Tyne. Mr. Hicks enjoyed an extensive practice, chiefly in the designing, fitting, and restoration of churches, in the northern and eastern counties of England; he was Architect and Surveyor to the Diocese of Newcastle and Surveyor of Ecclesiastical Dilapidations for the Archdeaconry of Northumberland. Amongst the more principal architectural works carried out by him and his firm we may instance the following:—In Newcastle-on-Tyne: the Church of England Institute; the completion of the church of St. Matthew, as begun in 1879 after the late R. J. Johnson's designs, and the reredos of the church of St. Mary, both illustrated in the *Builder* of October 8, 1898 (No. XVIII. of our Series, "The Architecture of our Large Provincial Towns"); the reredos, St. Cuthbert's Church; parochial buildings, comprising clergy-house, mission hall, five clubrooms, gymnasium, &c., at a cost exceeding 5,500*l.*, for All Saints' Church in Pilgrim-street; also some restoration work in succession to Sir G. G. Scott at the Cathedral; and St. Barnabas Church, in Goldspink-lane, with sittings for 700 persons. The parochial hall and Sunday-schools for Walker, Co. Northumberland; St. Oswald Church, West Hartlepool; the restoration of the ancient church of St. Bartholomew, Newbiggin-by-the-Sea, previously repaired in 1888; of the interior of the church of St. Helen, Bishop Auckland; and, with additions, of St. Cuthbert's Church, Haydon Bridge, built in 1797. In Yorkshire: A new church at Carlin How, in the parish of Brotton-in-Cleveland; a new church in the Boosbeck district, Skelton-in-Cleveland, for 400 sittings; the church of St. John, Driffield; a new church at Thornaby, for the parish of St. Luke; St. Matthew's Church at Grangetown, in Cleveland; a new church for Dalton parish, Kirkby Ravensworth; a new church in the east part of Cleveland, N.R.; and the restoration of Deighton parish church, near Northallerton. In Norfolk: the restoration and enlargement of North Creake parish church; restoration of the parish church and its tower of All Saints, Shottesham, near Norwich; the reredos for Letheringsett parish church. The mission church of St. Paul's, Catton, Allendale; the church of St. Andrew, Cambois, Co. Northumberland; the gymnasium, Durham Grammar School; the Church Institute, Hexham; the Men's Club and Recreation Rooms, West-avenue, Gosforth; restoration of the parish church at Croft, near Darlington; and, together with the new reredos, of St. Cuthbert's parish church, Blaydon-on-Tyne; of the whole interior of St. John's Church, Sunderland, built in 1769; and the restoration of the ancient parish church of St. Michael, Felton, Northumberland. A large town church for St. Chad's, Bensham, near Gateshead, noticed in our article, "Architecture at the Royal Academy," of May 3 last; the choir-stalls for Jesmond parish church; memorial chancel, Washington parish church, Chester-le-Street; the Queen Victoria Memorial Cross, erected in the public gardens, Sedbergh; church of St. John, Crewe; remodelling and improvement of the parish church of Holy Trinity, Berwick-on-Tweed, originally built in 1648 (and enlarged in 1855), after the pseudo-Italian manner. About sixteen months ago Mr. Hicks was deputed, as we understand, to the important charge of the reparation and reinstatement, at an estimated outlay amounting to 20,000*l.*, of the well-known old parish church at Wymondham, in Norfolk, for which he had designed a new stone reredos.

GENERAL BUILDING NEWS.

CHURCH, ANNBANK, AYRSHIRE.—A new U.F. church has just been opened at Annbank Station. Externally, the front is of red sandstone, the walls being buttressed and rough-cast. The architect was Mr. Eaglesham, Ayr. The contractors for the work were as follows:—Builder, Dick; joiner, M'Intyre; plasterer, Miller; plumber, Dalrymple; painter, Fraser—all of Ayr.

ENLARGEMENT OF NORMANTON CHURCH, DERBYSHIRE.—The foundation-stone of an enlargement of this church was laid recently. The work, which will cost 3,500*l.*, includes a new chancel, new south aisle, vestry, and organ chamber. The architects are Messrs. Naylor & Sale, Derby, and the contractors are Messrs. Walker & Slater, also of Derby.

METHODIST CHAPEL, PENMAENMAWR.—The Penycae Calvinistic Methodists are building a new chapel on a plot of land adjoining the English Congregational Chapel at Penmaenmawr. The new chapel will have seating accommodation for 650, and will cost 4,500*l.* The architect is Mr. J. S. Coverley.

CHAPEL, DEWSBURY WORKHOUSE.—At Dewsbury Union Workhouse, Staincliffe, recently, the foundation stone was laid of the chapel which is being built in commemoration of the Coronation of King Edward VII. The architect is Mr. G. A. Fox, Dewsbury. The contemplated cost is about 1,500*l.* The contractors are—Mr. George Whitehead, Dewsbury, mason; Messrs. John Richardson & Sons, Kilpin Hill, joiners; Messrs. Jonas Thornton & Sons, Heckmondwike, slaters; Mr. Frank Newsome, Dewsbury, plumber; Mr. S. Crawshaw, Batley, plasterer; and Mr. Porritt, Dewsbury, painter.

BIBLE CHRISTIAN CHAPEL, PLYMOUTH.—The new Embankment-road Bible Christian Chapel, Plymouth, is approaching completion. It is situated at the corner of South Devon-place and Cattedown-road, and is being erected from plans prepared by Mr. H. J. Snell. Mr. J. Paynter, Mutley, is the builder. The new chapel will seat 750. The gallery is carried entirely round, the organ loft being at the back of the gallery, which flanks the rostrum. The rear seats in the well of the chapel will be elevated.

EXTENSIONS AND IMPROVEMENTS TO THE CITY HOSPITAL, SHEFFIELD.—At Sheffield Town Hall on the 18th inst., Dr. R. W. Johnstone, an inspector of the Local Government Board, held an inquiry into an application by the Corporation of Sheffield for sanction to borrow 11,563*l.* for extensions of the Lodge Moor Hospital, and 650*l.* for new stables at Winter-street Hospital. There were present the Deputy Town Clerk (Mr. W. E. Hart), the City Surveyor (Mr. C. F. Wike), Mr. E. M. Gibbs, the architect of the work, and others. Mr. Gibbs, in reply to the inspector, said that practically the work was done.

MEDICAL INSTITUTE, BELFAST.—A new Medical Institute has been erected in Belfast, situated in College-square North. It has a frontage of 45 ft. to the street, is about 46 ft. high, and built of light-brown stone from the Scrabo quarry in co. Down, with red Dumfries sandstone dressings. Entering through an outer and inner porch, one comes into the inner hall, which is about 24 ft. by 16 ft. Separated from it by a stone arcade, filled in with folding glass doors, is the library, 30 ft. by 34 ft. Behind these rooms is a small office for the librarian, a council-room, cloakroom, and lavatories. On the first floor is the lecture-hall, about 43 ft. by 30 ft., and 16 ft. high, with a musicians' gallery opening off it. Behind the lecture-hall are kitchen and serving-room. On the second floor is the billiard-room. On the same floor are the caretaker's apartments and another lavatory. The whole building is lighted by electricity. The architect is Mr. William J. Fennell. On the front of the building are four heads, life size. They are Professor Redfern and the late Professors Andrews and Gordon, and Dr. Henry MacCormac.

HOSPITAL AND SANATORIUM, WEYMOUTH.—On the 19th inst. this building was opened. It is situate at Greenhill, and faces the south-east. It is symmetrical in design, with a main central entrance and hall, with waiting-room and matron's room, a central staircase and corridor leading right and left to the wards. The four large wards, each 48 ft. and 24 ft. and 12 ft. high, containing twelve beds, have windows on either side, and in addition a bay window at the south-east end. The fireplaces are in the centre of the wards, lined with glazed tiles, and the floors are of polished wainscot oak. Adjoining each ward is a nurse's duty room. The lavatory and bathroom blocks are isolated by a cross-ventilated passage, the walls lined with white glazed bricks. In the central part of the building on the first and second floors are small wards with duty-room adjoining, and rooms for the matron, nurses, and domestic servants, with separate bathroom and lavatory accommodation. The operating theatre, with anæsthetic and sterilising apartments communicating, are on the first floor. The kitchen department is centrally situated on the ground floor at the back of the main corridor in a one-story building, and top lighted. On the ground floor under the wards are day and dining-rooms for convalescents, with easements leading direct into the gardens, and with cloakroom and lavatories. Accommodation is also provided for out-patients, consisting of waiting-room, private-room, and dispensary. The exterior walls are faced with red bricks relieved with stone, and the roof covered with Broseley tiles. The builders are Messrs. Creaton & Co., Lancaster-gate, W.; the hot-water work was carried out by Messrs. Rosser & Russell, Charing-cross, S.W.; and the architects are Messrs. Crickmay & Sons, of Weymouth and Westminster.

INSURANCE OFFICES, BELFAST.—New offices for the Ocean Accident and Guarantee Corporation, Limited, have been built at the corner of Chichester-street and Donegall-square East, Belfast. The building is Tudor in style, rising to the height of 125 ft., and containing five stories and an attic. Its walls are composed of Ballochmyle sandstone. As seen from the street a feature of the building is the tower, terminating in a finial bearing the figure of a ship. The frontage in Donegall-square East is about 70 ft., and that in Chichester-street 60 ft. Massive mullioned projecting windows, fitted with steel casements, relieve the general outer view, whilst the skyline is diversified by means of turrets and gables. On each side of the doorway the arms of the Company, supported by mermaids, are placed, and the balcony is supported by bracket busts of their Majesties the King and Queen and the late Queen Victoria. The roof is covered with Peake's "Perfecta" red roofing tiles, supplied by Messrs. W. D. Henderson & Sons, Belfast, who were also responsible for the asphalt work in the basement. There are on the ground floor of the building three shops, the entrance being by a double-recessed doorway leading into a vestibule whose walls are lined with marble. The approach to the various offices which will not be used by the company will be by means of a large lift nearly 7 ft. square, and worked by electricity supplied by the Corporation. In addition, there is a fireproof staircase rising to the top of the building. The company's own offices are panelled in mahogany to a height of 8 ft., the ceiling being similarly treated in Old English style. The secretary's and inspectors' offices adjoin. The strong room, situated in the basement, is formed of steel, and has a length of 30 ft. by 15 ft. wide and 9 ft. high, resting on a series of steel bars. The entire work was carried out by Mr. Robert Corry from the plans and specifications drawn by Messrs. Young & Mackenzie, Belfast. The plumbing was entrusted to Mr. John Dowling, Belfast; the tiling to Messrs. Riddel & Co., Donegall-place, who also supplied the wrought-iron banisters for the staircase; and the stained glass to Messrs. Ward & Partners. The carving was carried out by Messrs. Winter & Thompson, Belfast, and Mr. W. T. Coates, agent for the Waygood and Otis Company, was responsible for the large lift. The marble flooring came from Mr. J. F. Ebner's works, for which Mr. W. J. Shaw is the local agent.—*Irish News.*

EDINBURGH AND DISTRICT WATER TRUST NEW OFFICES.—The Edinburgh and District Water Trust have recently removed into new premises in St. Giles-street. The offices formerly occupied by the Trustees in the Royal Exchange being required for town purposes, and the business of the Trust having very greatly extended, it was found necessary to acquire other premises. The Trustees have secured the properties some time ago occupied by the *Courant* newspaper, and these buildings have been reconstructed to suit their requirements. On the ground floor, with entrance from St. Giles-street, is a public office for rate collecting and other business of the Trust, along with accommodation for the staffs of the Treasurer, Collector, and Surveyor. Separate entrances and exits are provided. Adjoining is the office of the works department, situated for the general public and tradesmen who are frequently in communication with this office. The first floor is adapted as a boardroom, 28 ft. by 19 ft., for the general meetings of the trustees, and adjoining is a committee-room communicating by folding doors, enabling these

rooms to be thrown into one apartment on special occasions. There is also provided rooms for the treasurer, collector, and superintendent of works, besides an office for clerks and draughtsmen, and cloakroom accommodation. On the second floor is the caretaker's house, typists' room, and stores. The alteration and reconstruction of the buildings have been carried out from plans prepared by Messrs. David and John Bryce, architects. Messrs J. Kinnear, Son, & Co. were the general contractors for the works.

PUBLIC LIBRARY, TOOTING.—A new public library has been opened in Mitcham-road, Tooting. The building is of red bricks with terra-cotta facings, and includes a reading-room with newspaper stands The reading-room is separated by a deal and glass partition from the lending department, which has shelving accommodation for some 10,000 volumes. The work has been carried out by Mr. Walter Wallis, from plans provided by Councillor Wm. Hunt, the architect for the work.

HOTEL, WEST KENSINGTON.—The Three King's Hotel, which adjoins the West Kensington District Railway Station, in the North End-road, has been reconstructed and reopened. The principal elevations are of red brick, with Portland stone dressings. There are five bars and a grand saloon. From the grand saloon the dining saloon (with accommodation for eighty diners) is reached. The kitchen is over the first floor, and communicates with the dining saloon by means of a lift. The grand saloon also communicates with the billiard-room. The lighting throughout is by means of electricity, the installation of which has been carried out by Mr. C. Thornton, of Chiswick. The builder is Mr. A. E. Flexman, of Shepherd's Bush; and the architects are Messrs. Richardson & White, of Hammersmith.

PAROCHIAL HALL, HALIFAX.—The opening ceremony of the New Parochial Hall in connexion with St. Michael's and All Angels' Church, Southowram-bank, Halifax, took place recently. The building, designed by Messrs. Walsh & Nicholas, together with the adapted old school premises, new furniture, &c., will cost about 1,463*l.*

STAINED GLASS AND DECORATION.

WINDOW, CLEWER ST. ANDREW'S CHURCH, WINDSOR.—The Bishop of Reading recently dedicated a stained glass window in Clewer St. Andrew's Church, Windsor, erected by his son, Mr. W. Glover, F.R.I.B.A., in memory of the late Mr. William Glover, who held office as Tapissier-in-Ordinary to Queen Victoria when he died in 1864, and to whose memory her late Majesty caused to be placed on his tombstone the inscription, "For many years a faithful, devoted servant to Her Majesty Queen Victoria."

NEW REREDOS, LONDON.—The altar of the chapel of the Sacred Heart in St. Charles' Church, Upper Ogle-street, London, commenced in 1863, has now been completed by the erection of the reredos, from the designs of Mr. S. J. Nicholl, the architect of the entire work. The reredos forms a screen extending across the chapel, and rising to the springing of the vaulted ceiling, and comprises statues of our Lord, and of four angels carrying the emblems of the Passion, enclosed in niches, with tabernacle work and other accessories. The work was executed by Mr. A. B. Wall, of Cheltenham.

MEMORIAL WINDOW, HALIFAX.—In the south aisle of St. Augustine's Church, a memorial window, placed in the church to the memory of Mr. Rowe, has just been unveiled. The window consists of two lights, one of which contains a figure of St. Paul, the subject of the other being St. Augustine, the patron saint of the church. Under the window there is a brass plate bearing an inscription. The window has been executed by Messrs. Powell Bros., of Leeds.

FOREIGN.

FRANCE.—M. Marcheix, assistant curator of the library and museum of the Ecole Nationale des Beaux-Arts, has been appointed curator in place of the late M. Müntz.——Three new rooms are to be opened at the Versailles Museum, in the north attic; they will be devoted to works of the reign of Louis XIV.—battle pieces, *genre* subjects, and portraits by Rigaud and Largilliere, &c.——The municipality of Coulommiers has opened a competition for the construction of a new theatre.——Important works are to be commenced in the Maritime Alps, to bring to Cannes the water of the Siagne and the Loup.——The Municipal Council of Bordeaux has decided on opening out an important new street from the Midi railway terminus to the Place de la Comédie.——The town of Cette is about to erect a municipal theatre at a cost of about 1,700,000 fr.——The statue of Balzac, by Falguiere, was inaugurated on Saturday last at Paris.——In the course of the excavations for the third section of the metropolitan railway, the piles have been discovered which formed part of the foundations of the ancient Porte du Temple, of the time of Charles V.——M. Fernoux has been elected President of the Société Nationale des Architectes de France for 1903.——The exhibition of the Société des Artistes Lyonnais will be held in the Place de la Charité from January 10 to March 10. The International Art Exhibition at Marseilles will open at the Alhambra, Marseilles, on January 31.——The official opening of the Petit Palais is fixed for December 11.——M. Frémiet, the sculptor, has offered to the city of Paris the model of his statue of Du Guesclin, the bronze of which has been erected at Dinan. The model will be set up in the Petit Palais along with the same sculptor's "Héraut d'armes."

MISCELLANEOUS.

STUDENT'S COLUMN.—Our "Student's Column" article is unavoidably held over until next week.

GUILD OF HANDICRAFT.—The exhibition of the Guild of Handicraft at the Woodbury Gallery in New Bond-street, previously noticed in our columns, is to be kept open till December 10. New exhibits have been added, including jewellery, enamels, silver work, furniture, mahogany, &c.

WORKHOUSE EXTENSION, CHELSEA.—At a recent adjourned meeting of the Chelsea Board of Guardians, a communication was read from the Local Government Board approving the plans relating to the extension scheme proposed to be carried out at the workhouse of the parish of St. Luke, Chelsea. The Chairman said it was extremely gratifying to them to think that the plans should have been returned to them without the slightest alteration, and asked permission to call the architects in and signify the Board's approval of their work. Permission having been granted, Mr. Lansdell (Messrs. Lansdell & Harrison) was called in, and the Chairman said the Board wished to express their pleasure at the success of the plans. In the whole of his career he (the Chairman) had never known a case where plans submitted to the Local Government Board for such a scheme as that had been returned without some alterations being asked for. Mr. Lansdell briefly thanked the Board and withdrew.

INCORPORATED CHURCH-BUILDING SOCIETY.—This Society held its usual monthly meeting (the first of the present session), on Thursday, the 20th inst., at the Society's house, 7, Dean's-yard, the Rev. Canon J. Erskine Clarke in the chair. Grants of money were made in aid of the following objects, viz.:—Building new churches at Alexandra Park, St. Saviour, Wood Green, Middlesex, 100*l.* for the first portion; Keighley, All Saints, Yorks, 60*l.* for the first portion; and Old Trafford, St. Hilda, Manchester, 100*l.* for the first portion; and towards enlarging or otherwise improving the accommodation in the church at Cudworth, St. Michael, near Ilminster, Somerset, 25*l.*; Lower Guiting, St. Michael, near Cheltenham, 25*l.*; and Saintbury, St. Nicholas, Gloucester, 10*l.* Grants were also made from the special Mission Buildings Fund towards building mission churches at Ayresome, near Linthorpe, Yorks, 20*l.*; and Gosberton, near Spalding, Lincolnshire, 30*l.* The following grants were also paid for works completed:—Little Oakley, St. Mary, near Harwich, 50*l.*; Morecambe, St. Barnabas, Lancashire, 80*l.*; Alberbury, St. Michael and All Angels, near Shrewsbury, 15*l.*; Hebburn, St. Oswald, Durham, 45*l.*; Smethwick, St. Stephen, near Birmingham, 150*l.*; Worlington, All Saints, near Soham, Cambridgeshire, 25*l.*, making in all 40*l.*; Middlesbrough, St. Columba, Yorks, 130*l.*; Battersea, St. Bartholomew, Surrey, 300*l.*; Hoxton, St. Anne, Middlesex, 10*l.*; Chichester, St. George, 315*l.*; Compton Martin, St. Michael, near Bristol, 30*l.*; Gunness, St. Barnabas, near Doncaster, 5*l.*; Weston-super-Mare, St. Saviour, Somerset, 60*l.*; Cley-next-the-Sea, St. Margaret, Norfolk, 30*l.*; Shotton, St. Ethelwold, near Hawarden, Flints, 110*l.*; Weeke, St. Paul, near Winchester, 50*l.*; and Walthamstow, St. Luke, Essex, 50*l.* In addition to this, the sum of 365*l.* was paid towards the repairs of twenty churches from trust funds held by the Society. The Society likewise accepted the trusts of sums of money as repair funds for the churches of St. John the Evangelist, Kenilworth, and St. Paul, Walkden Moor, Lancs.

METROPOLITAN STREET TRAFFIC.—A correspondence has recently passed between Mr. W. Rees Jeffreys, Hon. Secretary of the Roads Improvement Association, and the Chief Commissioner of Police of the Metropolis, in which the latter's attention was drawn to the fact that the collection of statistics of street traffic was quite a neglected branch of public administration, and put forward a proposal that in London, where the street traffic problem is so acute, a periodical census of traffic should be taken by the police. The Chief Commissioner was asked whether it would be possible to arrange for the collection and publication of such statistics by the police at regular intervals, and also whether another copy of the circular, dated August, 1898, addressed to railway companies, carmen, and others, could be issued; and, finally, the Roads Improvement Association desired information as to the number of drivers of slow-going vehicles who had been prosecuted by the police, since the issue of the circular in 1898, for obstructing the traffic by not keeping to the left or near side of the road. In his reply, the Commissioner expressed his willingness to reissue the circular in question, but pointed out that this circular is more of the nature of an invitation, the police not having power to enforce the suggestions contained therein. In the concluding letter of the correspondence the Association expressed the opinion that the police authorities should have the assistance of an advisory committee appointed by the Secretary of State and representing the various classes of traffic, in order to reconcile conflicting interests.

THE LATE MR. BENTLEY.—We are glad to hear that there is an intention on the part of some architects who are admirers of the genius of the late Mr. Bentley, to combine together to secure the erection of a fitting monument to him in the interior of his great church at Westminster.

POLLUTION OF THE RIVER LEA.—In reference to the polluted condition of the River Lea between Stanstead Lock and Hertford, an "urgency inspection," it is reported, took place recently by a party of gentlemen representing the Lea Conservancy, the East London Water Company, and other interested persons, the result of which was to confirm the reports. The Manifold Ditch is connected with the Hertford Sewage Works, and the Corporation of that town seems to have been regarded as the cause of the pollution, although some time back one of the High Court Judges failed to coincide in this view. The East London Water Company is directly concerned, its intake being at Ponders End, below the polluted area, and for some time past the directors have been endeavouring to arrive at an arrangement with the Hertford Corporation. It is stated that an agreement has been entered into under which a much desired improvement will be carried out.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointment of the following sanitary inspectors:—Messrs. A. Wheaton and J. Dunworth, City of London; Mr. J. H. Fowles, Kensington.

SLATE TRADE.—The Festiniog price-lists for the coming year have been issued, showing an advance, especially in mediums and seconds. The Bangor and Carnarvon lists may be expected next week. Demand is very brisk, and the importation of foreign slates very small.

THE CARPENTERS' COMPANY.—The examination in sanitary building construction, held annually by the Carpenters' Company, took place at their hall last week. Among the examiners who supported the chairman, Professor Roger Smith, were Professor Henry Robinson, Mr. John Slater, Messrs. A. Wynter Blyth, John Wilson, and Bartlett. The number of candidates presenting themselves was the same as last year, and one came from such a far distant colony as Hong Kong, while others came up from Worthing, Portsmouth, &c. The average number of marks obtained was rather higher than that in previous years. The following is the list of successful candidates arranged in order of merit:—*Silver Medals*: Messrs. G. H. Griffiths, A. J. Carter, and Jas. Lawrence. *Bronze Medals*: Messrs. J. H. Sills, C. W. Woodhouse, and James McLachlan. *Certificates*: Messrs. W. H. Wood, J. A. Chubb, A. Stewart, A. L. Carter, F. E. Glover, F. Fisher, F. Harris, and S. Savill.

HAMILTON ARTS AND CRAFTS ASSOCIATION.—The opening address by the President of this Association, Mr. James Lochhead, was delivered on the 17th inst. The programme for the session includes papers on "Shoring, Scaffolding, &c.," on "The Law and the Builder," "Tenements for the Working Classes," "Æsthetics," "Sanitation," and other important subjects.

SEWERAGE SCHEME, LICHFIELD.—Mr. R. H. Bicknell, Local Government Board Inspector, has held an inquiry at Lichfield into the application of the City Council for sanction to a loan of 7,000*l.* in connexion with the sewerage scheme. The application was the result of a memorial presented to the Local Government Board about a year ago by the Bishop, Dean, residents of the Close, and other prominent citizens, alleging serious defects in the sewerage system, and various other matters. The Corporation thereupon instructed Mr. J. R. Elliott, A.M.Inst.C.E., of Nottingham, to thoroughly investigate and report generally upon the matter, with the result that the complaints were found to be justifiable, and various works were recommended to put the city into a good sanitary state. The chief works necessary are a new low-level intercepting sewer to effectually drain the low-lying districts, the taking up and relaying of the sewers that have backfalls or insufficient falls, and the provision of manholes, lampshafts, and ventilators; in some cases the existing manholes being about a mile apart. The Inspector went thoroughly into the details of the various proposals, and at the conclusion of the inquiry said that he thought the Corporation had met the memorialists very thoroughly, and he wished particularly to compliment Mr. Elliott upon the excellence of his report, and the careful and fearless manner in which he had brought all the matters he considered necessary before the Council. There was no opposition to the application.

CAPITAL AND LABOUR.

PLUMBERS' LOCK-OUT, LIVERPOOL.—Some time ago a small dispute arose between Messrs. Tomkinson & Sons, builders, and some of their plumbers respecting the amount of money due to the latter. The board of arbitration, consisting of four masters and four employees, appointed to interpret the rules affecting such a case as the one in question, was not called upon to act, the operatives employed on Messrs. Tomkinson's jobs and at their shop being, instead, called out. This has led to an extension of the trouble, the Master Builders' Association of Liverpool having issued a forty-eight hours' notice, expiring on Saturday last, to lock out

he whole of the operative plumbers in the Liverpool district unless the men at Messrs. Tomkinson's returned to work. This they had not done up to Saturday, and consequently the lock-out notice took effect. Upwards of 300 plumbers are affected.

LEGAL.

BUILDER'S COMPLAINT AGAINST A CONVICTION BY JUSTICES.

On the 21st inst., Mr. Abinger moved before a Divisional Court of King's Bench, composed of Mr. Justice Wills and Mr. Justice Bruce for a rule *nisi* calling upon the justices of the County of Middlesex sitting at Brentford, to show cause why a writ of *certiorari* should not issue directing them to bring up for the purpose of being quashed a conviction which they had entered against Mr. Smith, a builder, of Hanwell. Mr. Abinger stated that Mr. Smith had recently erected forty-two houses in the neighbourhood of Hanwell, and he was summoned before the Justices of Brentford under one of the by-laws of the Hanwell District Council, for not having given notice to the Local Authority within reasonable time of the completion of a building. When the defendant appeared before the Justices, the Chairman, Mr. Montague Sharp, directed him to go into the dock. The defendant hesitated, and the Chairman again requested him to go into the dock. The Surveyor of the Local Authority was called, and, in reply to the defendant, he admitted that the house in question had not been completed. The defendant submitted that the reply of the witness was an answer to the summons: whereupon the Chairman remarked that it was not an answer, as the defendant had allowed the house to be occupied. The defendant protested that he had not, and said he had documents showing that he was endeavouring to get rid of the man who had entered into possession without his permission. A letter written by the defendant to the man who had gone into the house without permission was read, and it showed that the defendant desired to get the man out because the house was not fit for occupation, and that he threatened to apply for an ejectment order. That letter, the chairman said, convicted the defendant, and in the result the defendant, without being allowed to call his evidence, was convicted and fined. The learned counsel submitted that there was no evidence on which the justices could convict the defendant, and that there had been a miscarriage of justice.

In the result, the Court granted a rule *nisi* for a *certiorari*.

MANDATORY INJUNCTION GRANTED AGAINST A DISTRICT COUNCIL.

Mr. Justice Joyce, in the Chancery Division on the 20th inst., concluded the hearing of the case of Leyman *v.* the Hessle Urban District Council, an action by the plaintiff—the owner and occupier of a house and grounds at Hessle, near Hull, situated on the south side of the high road leading from Hessle to Hull—for a mandatory injunction to compel the defendants to remove a public urinal the defendants had erected in August, 1901, and had since maintained, on the southern side of the highway close to the northern boundary of the plaintiff's property, and within 12 ft. of his entrance gates, the entrance of the urinal facing the highway. The plaintiff's case was that the urinal, in consequence of its position at his entrance gates and its user by the public, constituted a serious nuisance and injury to him in the enjoyment of his house and grounds.

The defendants denied that the urinal had created a nuisance, and pleaded that they had erected it under the provisions of Section 39 of the Public Health Act, 1875. They further said that the situation had been chosen after careful consideration, and that it was a necessity to the neighbourhood.

His lordship, after hearing a great mass of conflicting evidence as to whether the urinal, in fact, was a nuisance to the plaintiff, held, as a fact, that it was by reason of its position and construction a serious annoyance to the plaintiff and those inhabiting his house. He thought that it materially interfered with the ordinary comfort and convenience of the plaintiff in the enjoyment of his property. There was no legal necessity for the defendants to put the urinal in this road at all, and if they could not put it anywhere without creating a nuisance, then they could not do it at all. There would be a mandatory injunction against the defendants to remove the urinal within six weeks.

Order accordingly.

Mr. Hughes, K.C., and Mr. Bovill appeared for the plaintiff; and Mr. Younger, K.C., and Mr. Cozens-Hardy for the defendants.

APPEAL BY AN ENGINEER AND MANUFACTURER OF CARPENTERS' TOOLS.

The hearing of the case of Reynolds *v.* William Ashby & Son, Ltd., was concluded in the Court of Appeal, composed of the Master of the Rolls and Lords Justices Romer and Mathew, on the 21st inst., on the application of the plaintiff for judgment or new trial on appeal from a decision of Mr. Justice Lawrance in the King's Bench Division at trial with a special jury.

The short facts were as follows:—In the year 1900 the lessee of a piece of land at Reading, who was building a factory upon it, mortgaged the premises, together with the fixtures thereon, to a person who subsequently assigned the mortgage to the present defendants. Between the time when the mortgage was executed and the assignment to the defendants, the plaintiff, an engineer and manufacturer of carpenters' tools, let on hire to the mortgagor, the lessee of the factory, certain carpenters' machinery and apparatus, viz., saw-benches, a tenoning machine with cutters and self-contained counter-shaft, and a panel-planing and thicknessing machine. The lessee, by the hiring agreement, agreed to make periodical payments for the hire, and when the payments were completed the machinery and apparatus were to become the sole property of the lessee, but until the last payment the machinery and apparatus were to continue to be the sole and absolute property of the plaintiff. By the agreement the plaintiff had power, on the happening of certain events, to put an end to the hiring and to take possession of the machinery and apparatus. The machinery and apparatus was fixed or set up in the factory in this way. Each machine had a concrete bed laid for it, and was secured with upright iron bolts fixed in the concrete. There were holes in the plates to fit the bolts, and the bolts were secured by nuts screwed on to them, the machine being thus placed in position. The machines were worked by power conveyed by means of a band, and the evidence was that the machines could be removed by removing the nuts. Events happened which gave the plaintiff power to put an end to the hiring agreement and to demand the return of the machinery and apparatus. Prior to this, however, the original mortgagee took possession of the premises and of the plaintiff's machinery and apparatus, and declined to give them up, on the ground that they had been so affixed to the freehold that they became part of the land and passed under the mortgage. The present action was then brought by the plaintiff to recover the machinery and apparatus or their value, and damages for their wrongful detention. At the trial Mr. Justice Lawrance held on the authorities that there was no question for the jury, and that the machinery and apparatus were fixtures and passed to the mortgagee and from him to the defendants by assignment. He accordingly entered judgment for the defendants. Hence the present appeal of the plaintiff.

At the conclusion of the arguments of Counsel the Master of the Rolls, in giving judgment, held that Mr. Justice Lawrance was right in withdrawing the case from the jury. His lordship (the Master of the Rolls) said the rule seemed to be that articles not otherwise attached to the land than by their own weight were not to be considered as part of the land unless the circumstances were such as to show that it was intended all along to continue a chattel, the onus lying on those who contended that it was a chattel. Therefore that being the presumption arising from the fact of attachment, the onus was cast on the plaintiff of showing that it was not a fixture. The plaintiff had given no such evidence in the present case. He thought the learned judge's decision must be affirmed and the appeal dismissed.

The Lords Justices concurred, and the appeal was accordingly dismissed with costs.

Mr. H. Reed, K.C., and Mr. Rowlatt appeared for the appellant, and Mr. Hamilton, K.C., Mr. Arthur Powell, K.C., and Mr. J. H. Keeling for the respondents.

EMPLOYERS' LIABILITY ACT:

LOOSE BRICKS UPON A WALL—QUESTION AS TO TRADE CUSTOM.

At the Brompton County Court (London) on Monday, before Judge Stonor, Walter Henry Derbyshire, a bricklayer, 156, St. James'-road, Holloway, N., brought an action, under the Employers' Liability Act, against Messrs. Leslie & Co., Ltd., builders and contractors, Kensington-square, W., claiming damages in respect of personal injuries, said to have been caused through negligence on the part of the defendants or their servants.

Mr. Chester Jones, counsel, appeared for the plaintiff; and Mr. E. F. Lever, counsel, for the defendants.

Plaintiff's counsel explained that his client had been employed by the defendants upon some building operations at the Science and Art Department, South Kensington. On July 11 last the man was building a circular wall in an excavation, above which was a high wall in the course of construction, and near the top of which a carpenter was laying timber for concrete flooring. Upon the top of the unfinished wall some bricks had been temporarily and loosely laid, and one of these, it appeared, was knocked so that it fell upon the plaintiff's head, inflicting serious injuries. The negligence which they complained of was in sending the man to work below a wall upon which loose bricks were laid as described, and not erecting a covering of some kind to protect him in case a brick should fall.

The plaintiff bore out counsel's opening statement. He added that it was usual in the trade to board over workmen if brickwork was being done above them, as in the case in question.

In cross-examination, the plaintiff admitted that there was nothing unusual in bricks being placed temporarily upon a wall in course of erection, and that it was usual to leave a space of about 9 in. between a scaffold and a newly-built wall.

Henry Offord, another bricklayer who was working on the job, maintained that, although it might not be right to place bricks upon a partly-built wall while the scaffolding was being shifted, such was often done.

Counsel for the defence submitted that there was no evidence of negligence, for it appeared that the brick was knocked off inadvertently. The evidence was that to place bricks on a wall while the scaffolding was being shifted was a custom of the trade, or at least a trade expedient.

The Judge: Why should the loose bricks be left on the wall in such a way?

Counsel for the defence: They were left there in view of subsequent building. The learned counsel went on to say that no one was working on the wall in question at the time of the accident. The whole question was whether the leaving of loose bricks upon the wall amounted to negligence, or whether leaving the bricks unguarded amounted, under the circumstances, to a defect in the ways, works, and means. The plaintiff's own witnesses had admitted that bricks were not infrequently left upon a wall, as in the case in question. He trusted to this old-established custom of the trade, for where they found such a custom it was fair to assume that it was not a dangerous one.

For the defence, William Dodds, foreman bricklayer on the job in question, stated that it was a custom of the trade to put bricks temporarily upon a wall, as in the case in question, when a scaffold was being taken down or raised. It was not usual to place a guard or anything to prevent the bricks falling.

Cross-examined: Ordinarily, when bricks were so placed, there would be no men working beneath. When men were working below such a wall upon which loose bricks were placed, it was usual to "sheet" them over in some way; and if he had known that there was any danger in the way or position that the plaintiff was working he would have put up something to protect him.

Re-examined: There was, however, no one working on the wall at the time of the accident.

The Judge: That may be, but men were working so near that a brick got knocked off. It is evident that it could not go over of itself. I do not know about the custom of the trade, but I think that this man ought to have been protected. I find for the plaintiff for 15*l.*, as claimed, with costs.

ACTION BY AN ARCHITECT.

The case of Homer *v.* Affleck came before Mr. Justice Darling and a common jury in the King's Bench Division on the 25th inst. Mr. Spokes appeared for the plaintiff; and Mr. Pickford, K.C., and Mr. Sanderson for the defendant.

Mr. Spokes, in opening the case, said the action was brought by Mr. Chas. Edward Homer, an architect in the City, against Sir Robert Affleck, Bart., for remuneration for work done by the plaintiff for the defendant. Sir Robert Affleck was the owner of a very large estate near Bournemouth, and he was desirous of having it developed by erecting houses upon it so as to obtain ground rents. He had heard that Mr. Homer had been very successful in developing a similar estate in Essex, and the defendant's solicitors got into communication with the plaintiff, and asked him to let him see the plans of the houses that had been erected at Clacton-on-Sea. On November 24, 1900, defendant himself called upon the plaintiff at his office in the City, and introduced himself. He said he wanted twenty houses put up before the summer season, and he wanted the plaintiff to get on with the designs as soon as possible. Defendant asked plaintiff particularly to get builders who would enter into agreements for the purpose of erecting the houses. He also asked the plaintiff what were the terms of the work at Clacton-on-Sea. Plaintiff replied that for every builder he introduced he usually got a certain commission. He also got 5 per cent. on contracts for superintendence. Plaintiff told defendant that he would stop out of the monies due to the builders the commission due to plaintiff. Sir Robert said he would arrange with the Birkbeck Bank to advance him 20,000*l.*

The plaintiff and Sir Robert went down to Bournemouth three times and inspected the site, and Sir Robert's name was put on the plans, so there could be no dispute as to the defendant accepting responsibility for them. The plaintiff had interviewed at least a dozen builders. Three of them agreed to take plots and a Mr. Gibson and a Mr. Bent actually signed agreements. The other builder, a Mr. Birch, would have been willing to sign the agreement, but it was put off owing to the action of, or through the fault of, defendant's solicitor. Sir Robert afterwards threw up the whole scheme, and would not go on with it, and the present action was brought by the plaintiff to recover the amount due to him.

In answer to his Lordship, Mr. Sanderson said he disputed the plaintiff's charges as well as the defendant's liability.

Mr. Spokes said that he did not mind referring the items, but on the question of whether his client was to be paid or not he wished to go to the jury.

His Lordship said that he should not let the matter go to the jury, as it would be inconvenient. If the parties could not agree on some one to whom the whole matter could be referred he should send the case to an Official Referee.

After a short consultation between counsel, Mr. Spokes said it had been agreed that the case should go to Mr. Verey, the Official Referee. He wished his lordship to note that the reference was to be taken as a compulsory reference.

ACTION BY ARCHITECTS.

THE case of Owen & Ward *v.* Davison came before Mr. Justice Ridley and a common jury in the King's Bench Division on the 24th inst.

In this case the plaintiffs, Messrs. Owen & Ward, a firm of architects and surveyors, carrying on business at No. 71, Colmore-row, Birmingham, brought their action against the defendant, Mr. A. W. Davison, a London licensed victualler, to recover 161*l.* for work done as architects in compliance, as it was alleged, with the instructions of the defendant.

The defendant denied that he gave the instructions or that the work was done. He also alternatively pleaded that if the instructions were given and this work done it was agreed that he and the plaintiffs were to form a syndicate and to share resulting profits from a common speculation.

The plaintiff's case was that the defendant on June 21 last year instructed them to prepare plans for the building of a new hotel at Benfleet, Essex, to be known as the Thundersly Park Hotel. The plans were prepared and submitted both to the defendant and the Local Authorities, and by both approved. Some difficulty, however, subsequently arose with the local licensing authorities, who insisted upon the surrender of a licence prior to the granting of a new licence for the hotel, and the defendant deferred the proposed construction of the building.

The plaintiff, Mr. George Frederick Ward, gave evidence in support of the claim, and denied any arrangement as to the formation of a syndicate, in which his firm was to take part, with the object of financing the concern.

The defendant's evidence was to the effect that, through a man named Bell, whom defendant regarded as plaintiffs' agent (but which agency plaintiffs denied), the arrangement was that defendant should purchase the site and manage the hotel for twelve months, after which it was to be disposed of. Defendant denied that on a visit to Benfleet with Mr. Ward he had instructed that gentleman to prepare the plans in question.

In the result the jury, after two and a half hours' deliberation, returned a verdict for the defendant.

Judgment accordingly.

Mr. P. S. A. Hickey and Mr. Buzzard appeared for the plaintiffs, and Mr. Levis Thomas for the defendant.

THE MANUFACTURE OF ACETYLENE GAS.

IN the Court of Appeal, composed of Lords Justices Vaughan-Williams, Stirling, and Cozens-Hardy, on the 26th inst., the hearing was concluded of the case of the Acetylene Illuminating Co., Limited, *v.* The United Alkali Co., on the appeal of the plaintiff company from a judgment of Mr. Justice Buckley in the Chancery Division, dismissing the action brought to restrain the alleged infringement of Willson's patent of 1894, relating to the manufacture of carbide of calcium, a substance which has come largely into use during recent years.

Mr. Fletcher Moulton, K.C., Mr. Roger Wallace, K.C., and Mr. A. Colefax appeared in support of the appeal; and Mr. Cripps, K.C., Lord Robert Cecil, K.C., Mr. A. J. Walter, and Mr. Bucknill represented the respondents.

Mr. Moulton, in opening the case, said that the plaintiffs were the owners of a patent, No. 16,705 of 1894, for the manufacture of calcium carbide, a substance which had come into very large commercial use during the last few years. Nothing would turn specially upon the chemical points in this case, but, shortly, the nature of the substance, and its use was as follows: It was a very extraordinary body, which had the property when water was thrown upon it of giving off a highly inflammable gas—probably the finest illuminant known—which was called acetylene. It was a very curious instance of well-known phenomena in chemistry. It was a combination of carbon and the metal which was the basis of lime, and its curious properties were due to the fact that at a low temperature the avidity of calcium for oxygen was much greater than that of carbon. The consequence was that when water was thrown upon it, so great was the avidity of the calcium for oxygen that it tore apart the water into its constituents and left the carbon to combine with the hydrogen. It was a body that had been known for many years as a chemical curiosity, but this was a patent for a commercial method of manufacturing it. It was done by passing a very powerful electric current through it and so to generate an enormous degree of heat. Although at a low temperature the avidity of calcium for oxygen was greater than that of carbon, at a very high temperature the avidity of carbon was much greater than that of calcium, so carbon and lime were put together and heated to a tremendous temperature in the electric current. The carbon took all the oxygen. It was an instance of the changes in the avidity for oxygen according to the temperature. That had given a practical method of manufacturing calcium carbide.

Lord Justice Williams: Why was it called acetylene, and what does it mean?

Mr. Moulton was quite unable to say, but perhaps it was because it was supposed to be connected with the acetic acid series, or something of that kind. The parent of a chemical product had a perfect right to name that child; but it was difficult to say how the product got its name. The enormous advantage of calcium carbide was that gas could be conveyed in a solid form. The process was of the greatest commercial value, and one of the very largest water powers in the world in Canada was now harnessed to grinding out this calcium carbide.

Lord Justice Vaughan Williams asked if the calcium carbide had been obtained by other methods?

Mr. Moulton said that it was arrived at before, but he could not say how.

Lord Justice Vaughan Williams: It has no connexion with water gas?

Mr. Moulton: Oh no.

Lord Justice Vaughan Williams: I am not surprised that you disclaim all connexion with water gas.

Mr. Moulton said that the curious thing was that in this action the case of both sides was that Mr. Willson, by whom the patent was taken out in 1894, was the inventor of this process. The question really turned on whether or not he allowed his knowledge to slip out before the patent or whether the patent ought to be dated at such a date that some one coming behind him as to time came before him by way of anticipation. The two anticipations relied on were an earlier patent of Willson's in America, which was said to anticipate the patent of 1894, and a French publication, that publication coming before the date of the American patent and the patent in the action. In December, 1892, a Frenchman named Moissan commenced a series of papers on the subject, in which he pointed out that the essential thing in order to obtain crystalline carbide was to obtain sufficient heat. The material was subjected by him to the thermal action of the electric arc, and his idea was to dispense with the passing of the current through the material. On the other hand the patentee said:—"In carrying out my invention I employ a suitable electric furnace, such as a Siemen's arc furnace, and in its chamber I place lime and carbonaceous matter, and pass a powerful electric current through it in order to generate an enormous degree of heat." He was the first person to tell the world that a current of electricity passing through the material would produce calcium carbide. There might be other means of producing it, but the patentee's method was the only way economical enough to make the product of commercial value. Moissan's was what was known as the "toasting" method, and in that a commercial current was used to produce a laboratory specimen. The learned counsel contended that the defendants had infringed Willson's 1894 patent, and the fact that defendants used an incandescent furnace and not an arc furnace made no difference on the question of infringement.

Mr. Cripps, on behalf of the respondents, contended that Mr. Justice Buckley's judgment was right in every particular. He submitted that there was no subject matter of a patent in the plaintiff's process, and that even if there were, the patent had not been infringed by the defendants. The production of calcium carbide was not new, and the use of an old, well-known form of electric furnace, namely, Siemen's arc, to produce it was not a discovery which justified a patent. There was no suggestion of the slightest difference between the commercial and the laboratory process, and, according to the patent laws of this country, when a scientific discovery had been disclosed any one was entitled to use it for all purposes.

In the result their Lordships held that the patent was bad, on the grounds both of anticipation and want of subject matter, and dismissed the appeal, with costs.

CHELMSFORD ANCIENT LIGHT DISPUTE.

THE case of Mayhew *v.* Green came before Mr. Justice Farwell in the Chancery Division on the 25th and 26th insts., an action brought by John Newton Mayhew, a fishmonger, carrying on business at No. 33, High-street, Chelmsford, which he holds under a lease, claiming a mandatory injunction or, in the alternative, damages against the defendant in respect of the alleged infringement of ancient lights.

It appeared that the defendant is an outfitter, residing and carrying on business at No. 34, High-street, Chelmsford, of which premises he was, as well as of No 35, High-street, the owner in fee simple. On the north side and in the rear of these premises was a yard, known as Jeffries'-court, over which both plaintiff and defendant had a right of way, but which did not form a part of either property. The plaintiff complained that in February, 1901, the defendant erected partly on the yard in the rear of No. 34 and partly on the yard over which the plaintiff has a right of way a building higher than an 8-ft. wall alleged to have formerly been there, and thereby diminishing the light coming to the plaintiff's windows. The plaintiff accordingly asked for a mandatory injunction compelling the defendant to pull down and remove the said building erected above the level of the old wall before mentioned.

Mr. Ruegg, K.C., and Mr. R. G. Davis appeared for the plaintiff; and Mr. C. E. Jenkins, K.C., and Mr. Maclaren for the defendant.

During the course of Mr. Ruegg's opening statement, his lordship remarked that it was a strong thing to ask for a mandatory order after so long a delay, the building complained of having been built in February, 1901.

Mr. Jenkins said that the defendant's building was completed not only before the issue of the writ in the action, but before complaint.

Mr. Ruegg said that the plaintiff on January 12, 1901, wrote complaining that defendant's building would interfere with the access of light to No. 33, High-street.

In the result the parties agreed on a settlement of the case. By consent judgment was entered for the plaintiff for 60*l.* with the costs of the action.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

15,069.—AN ELECTRICAL FUSE PLUG: *F. H. Krebs.*—The plug has a middle cavity, and its lower part is perforated to a determined gauge. Spring arms of the bottom conducting-plate grip the conical lower end of the plug. The plate has a part raised at the middle, to which the fuse wire is connected, for lengthening the wire, and to prevent arcing the upper portion is put into a circular or spiral groove, and is clamped to the terminal. A detachable tubular portion of the plug provides for a variation of the gauge. The fuse plug is arranged so that one can easily replace the lead wire, and the insertion of a wire of larger gauge is obviated.

15,074.—AN APPLIANCE FOR WINDOWS: *J. A. Brooks.*—For maintaining sashes at any height desired without weights or cords, and for preventing the rattling of sliding and other sashes, the inventor secures rubber or similar wheels to the sash that press against the beads or solid frame; the stiles carry sockets, of which the caps hold springs and balls, the latter being forced outwards by the springs into recesses in the frame.

15,098.—A CONTRIVANCE FOR USE WITH FLUSHING APPARATUS: *M. Brook.*—The inventor devises means of closing a gully trap before flushing. He inserts an elbow which a screw clamp presses against the outlet, a packing-ring and fastening pins being provided. A cover, which is clamped or bolted down, is used for gullies that have seal-plates.

15,112.—AN ATTACHMENT FOR CRANES USED IN EXCAVATING, &C.: *H. O. Bakley.*—The outer end of the bucket-ladder is sustained from the jib-end with a sling fastened at two points, whilst it is pivoted at its inner end to the lower end of the jib. The bearings of the pivot-pin at the inner end of the ladder slide in circular guides, which have for their centre the shaft of the barrel, and a screw and nut, or a chain and worm-gearing, adjust the pin in the guides. The excavating-bucket may be mounted so as to cut either upwards or downwards on a roller-carriage, having rollers that run upon the bevelled bottom edges of the beam, or it may be mounted as specified in No. 7,219 of 1900; otherwise a chain of buckets around tumblers at the bottom and top of the ladder is substituted for the one single bucket, and chain-gearing from the shaft rotates the top tumbler. A shoot for the discharge is secured to the upper end of the ladder.

15,130.—MEANS OF WARMING AND LIGHTING ROOMS WITH ELECTRICITY: *A. E. Greville.*—An openwork casing envelops a frame which is wound with non-oxidising and resistant wire, and thereon is mounted an incandescent lamp in a glazed lantern. The sections of the wire are covered with asbestos thread, and, together with the lamp, are connected in circuit by switches of which the handles project from the sides of the base. Connexion with the supply wires is afforded by a plug coupling.

15,155.—CONDUITS FOR ELECTRICAL CONDUCTORS: *H. Hirst and F. Boyes.*—The conduits consist of tubes that are joined to one another with socket pieces fashioned with interior ribs; the lengths of the conduits also may have similar ribs. The joints are adapted for turns, elbows, and T-joints, as well as for straight lengths.

15,160.—A GUARD FOR HAND-FED PLANING MACHINES: *H. W. Gibbs.*—Of the two plates that constitute the guard, one is joined with pins, and inclined slots to an arm which is pivoted to a bracket, and the other is pivoted to the bracket as well. Springs cause the two plates to bear against the fence. As one feeds the wood along the bench, the pivoted plate of the guard will be pushed back so as to rub against the side of the work; then the other plate will be pushed forwards so as to uncover the cutters, until the studs pass to the opposite ends of the slots, whereupon the arm turns backwards upon its pivot on the bracket.

15,176.—FASTENINGS FOR "EMERGENCY-EXIT" DOORS: *H. G. Newman.*—Of the two arms ...at

carry a push-bar, one is pivoted on to a box or casing and the other on to a bracket affixed to the door. A pair of arms or ears of the former arm are linked to bolts that slide in guides upon the casing, which are fastened to the door, and engage with sockets in the floor and the door-frame. With the forcing inwards of the push-bar the former arm will be turned for the withdrawal of the bolts and consequent release of the door. The bolts will be held in that position through the engagement of a pivoted catch upon one of the sliding bolts with a rib of the casing. The door may be unfastened from without by means of a spindle, of which a lug engages with a projection from one of the links, which will be lifted, so that the bolts may be drawn out, by the insertion of a key that engages with the spindle. For a double door the push-bar is formed in two overlapping sections. An eccentric or a crank-plate or disc may be adopted instead of the arms or ears of the inner end of one of the arms that carry the push-bar, and in that form the links are joined eccentrically to the disc or crank-plate.

15,204.—A COATING FOR GOODS OF POROUS MATERIALS: *A. Wolf.*—The surfaces of articles of stone, plaster, &c., are treated with a preservative and decorative composition made up of resin, stearine, bitumen, creosote, and benzoin, to which pigments may be added. The goods should be heated before treatment, and the coating is to be applied when it is hot.

15,215.—APPARATUS FOR OPENING AND SHUTTING WINDOWS: *P. Hesemann.*—The two strands of the working wire cord are twisted in opposed directions. One end of the cord is secured in a vertical rod that slides in a slotted guiding tube, and the other end is clamped on to a catch pivoted upon the window with a U-shaped pin that is to be drawn for liberating the window when the bent portion is turned upwards clear from the bracket. The vertical sliding-rod has a handle, and the cord, moving in a guide tube, releases the catch from a striking-plate as the handle is lifted.

15,239.—SWITCHES AND CUT-OUTS: *E. E. Bartlett.*—A porcelain block which, when pivoted at its one end, will serve for a switch, has at each of its ends a copper plate which is bent so as to provide tongues that will engage with terminal blocks. A fusible strip, fastened with nuts, fits into channels of the porcelain block.

15,245.—PANTOGRAPHS AND THEIR FITTINGS: *Gaultier, Magnier, et Cie.*—In order that the resistance to the tracing point may be approximated to that of the scribing point during the copying of designs, charts, &c., the tracing point is caused to cut through a sheet of gelatine or celluloid that is laid over the design; otherwise, a sheet of celluloid or tracing-paper on which the design has been drawn is turned face downwards. For reproducing large-sized maps or designs is devised a table that slides upon guides which will moreover slide along other guides, and the entire apparatus may be set so as to turn about a pivot. A cross-bar may be used for the adjustment of the pantograph.

15,258.—HANGINGS FOR ARC LAMPS: *J. T. Irwin and Willans & Robinson.*—The arc lamp is secured to an insulator, and is electrically connected to a hook and eye on the insulator, which engage with an eye and a hook mounted upon another insulator carried by a fixed tube through which are passed the supply conductors. The wire that sustains the lamp is inserted through an inner guide-tube, and is passed around pulleys to a counter-weight which, after the lamp is lifted into place, will also be lifted and held. the hooks and eyes bearing the entire weight of the lamp.

15,284.—A SANITARY PIPE-JOINT: *C. H. W. Biggs.*—Relative movement of the spigot and socket is prevented by means of a spiral cavity for the interlocking of the fluid cement with the cement and the composition, the cavity being left by the narrow or broad spiral wall or ridge of the composition; corrugations on the spigot and socket take the composition.

15,316.—A PRESERVATIVE FOR WOOD: *C. G. Lawrence and F. McConick.*—Pockets for the composition are formed by boring holes in the wood of telegraph and telephone posts, railway ties, &c., and are then filled with an admixture of 16 parts of sodium chloride, 8 of arsenious acid, and 1 of mercury bichloride, with, on occasion, 2 of potassium nitrate and 1 of copper subacetate.

15,368.—A SAFETY DEVICE FOR ELECTRICAL LEADS: *Siemens and Halske A.-G.*—In the case of exposed leads the inventors contrive that the breaking of the wire shall enable the support to swing into contact with a conductor which is connected to the other pole of the generator or to earth. In one form a cross wire, over which is a wire connected to earth, supports the holder; in another form a pivoted arm carries the trolley holder, and conductors at the sides are connected to earth.

15,370.—AN ELECTRICAL CURRENT METER: *Siemens and Halske A.-G.*—Additional force that will lessen sensitiveness with an increase of deflection is provided in an instrument that measures electromotive force or strength of current, and has a spring control, so that a more uniformly divided scale is supplied for a dynamometer or any instrument after the induction or rotary field kind wherein the deflecting force varies as the square of the current. In one adaptation a weighted arm balances the spring-controlled pointer, whilst another weighted arm tends to move the pointer over the scale from zero, where it may be stopped with a fixed spring. For the second weighted arm may be substituted an armature attracted by a magnet, and a single intermediate arm may replace the two weighted arms.

15,432.—IMPROVEMENTS IN GRABS: *F. K. Hoover and A. J. Mason.*—A translating motion, with but slight rotation, is imparted to the jaws of the grab in the early portion of the opening operation, whilst towards the end they are quickly rotated for the dumping of their contents. Bent and pivoted side levers join the front of each jaw to the shaft, and the bends of the levers that sustain one jaw are pivoted on to other levers joined to the rear of the other jaw. The side levers are also pivoted on to arms that are joined by toggle-levers to a stirrup attached to the opening cable and by other toggle-levers to the shaft which carries a pulley, around which the closing cable passes, and so to pulleys upon the side levers. The closing cable also raises the grab, which is lowered by the opening cable, and the stirrup limits the opening operation.

15,450.—CONVEYANCE AND PILING OF TIMBER: *A. J. Tenow and J. E. Flodström.*—The boards are raised on to and discharged from live roller ways of which certain parts are so pivoted that one can let them down in order to form inclines, up or down which the boards may be carried. A shaft that is geared to the shaft on to which a movable part of the roller way is pivoted drives the rollers upon that same part.

MEETINGS.

SATURDAY, NOVEMBER 29.

Liverpool Architectural Society (Incorporated).—An excursion to the New Technical Schools at Wigan. Messrs. Briggs & Wolstenholme, the architects of the Schools, have consented to show the Society over the building.

Builders' Foremen's Association, Memorial Hall, E.C.—Mr. Ebenezer Howard on "The Garden City Project." 8.15 p.m.

MONDAY, DECEMBER 1.

Royal Institute of British Architects.—Business meeting (1) to announce results of November Examinations; (2) Election of candidates for membership; (3) the Practice Standing Committee will make a communication respecting the book on "Dilapidations," compiled by the Committee and now preparing for publication. 8 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "The Future of Coal Gas and Allied Illuminants." II. 8 p.m.

Society of Engineers.—Mr. C. H. W. Biggs on "Depreciation of Plant and Works under Municipal and Company Management." 7.30 p.m.

Liverpool Architectural Society (Incorporated).—(1) Special general meeting to consider and approve the revised schedule of charges, clauses 12 *et seq.* (2) Mr. T. Mawson on "Gardens." Limelight Views. 6 p.m.

Royal Philosophical Society of Glasgow (Architectural Section).—Mr. A. B. McDonald, City Engineer, on "The Sewage Disposal of Glasgow and adjacent Burghs." Illustrated by photographs, &c. 8 p.m.

TUESDAY, DECEMBER 2.

Institution of Civil Engineers.—Mr. T. H. Minshall on "High-Speed Electrical Generating Plant." 8 p.m.

Royal Victoria Hall, Waterloo-road, S.E.—Professor J. W. Hinchley on "Colour and Colour Printing." 8.30 p.m.

WEDNESDAY, DECEMBER 3.

Royal Archæological Institute.—(1) Mr. C. R. Peers, M.A., F.S.A., on "Benedictine Nunnery at Little Marlow." (2) Messrs. F. W. Reader and A. S. Kennard on "Pile Structures near London Wall." 4 p.m.

Institute of Sanitary Engineers, Ltd.—General Purposes and Finance Committee at 4 p.m. Election Committee at 5.15 p.m.

Society of Arts.—Mr. Alfred Watkins on "Some Aspects of Photographic Development." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

THURSDAY, DECEMBER 4.

Institution of Electrical Engineers.—Mr. Swinburne's Inaugural Address, postponed on account of his illness from November 13, will be delivered in the rooms of the Institution of Civil Engineers at 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. T. Stirling Lee on "Sculpture as Architectural Decoration." 6.30 p.m.

London Institution.—Mr. R. Kerr, F.G.S., on "Colour Photography." Illustrated. 6 p.m.

FRIDAY, DECEMBER 5.

Architectural Association.—Mr. J. S. Gibson on "Architectural Practice: Real and Ideal." 7.30 p.m.

Birmingham Architectural Association.—Miss E. Charles on "Furniture."

Association of Managers of Sewage Disposal Works.—Annual general meeting and dinner, Holborn Restaurant. 6.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. A. Reynolds on "The Erection of Steel Bridges, Sheffield Extension of the London and North-Western Railway." 8 p.m.

Institution of Junior Engineers (Westminster Palace Hotel).—Mr. W. J. Tennant, Past Chairman, on "The Planimeter, explained simply, without mathematics." 8 p.m.

Glasgow Architectural Association.—Anniversary dance.

SATURDAY, DECEMBER 6.

British Association of Waterworks Engineers.—(Seventh Winter Meeting, at the Geological Society's Rooms, Burlington House, W.).—(1) Ballots will be taken for the Council and Officers for 1902-3, and for new Members and Associates; (2) Mr. W. H. Humphreys on "The Coating of Cast-iron Water Pipes"; (3) Mr. T. Molyneux on "Softening Plant at Wilmslow, Stockport Corporation Waterworks"; (4) Mr. John Shaw on "The Detection and Prevention of Underground Pollution." 10.30 a.m.

The Craft School (Globe-road, Bethnal Green, E.).—Mr. F. W. Troup on "Roof and Ornamental Leadwork." Lantern illustrations. 8.30 p.m.

British Institute of Certified Carpenters.—Annual general meeting. 6 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 11.—By SADLER & BAKER (at Frimley).

Frimley, Surrey.—Deepcut Bridge-rd., a freehold building site, 3 a. 3 r.	£400

November 12.—By BELLAMY & Co. (at Putney).

Putney.—80 and 84, Chelverton-rd., f., y.r. 100*l.*	1,450
Fulham.—7, Edgarley-ter., u.t. 93 yrs., g.r. 5*l.* 5s., y.r. 41*l.* 12s.	350
4, Cloncurry-st., u.t. 96 yrs., g.r. 7*l.*, e.r. 44*l.*	425

By BENJAMIN SIMONS (at Boston).

Midville, Lincs.—A freehold farm, 92 a. 2 r. 14 p.	3,200
Westville, Lincs.—A freehold farm, 134 a. 1 r. 8 p.	3,700

November 13.—By ELLIOTT, ELLIS, & Co. (at Plymouth).

Plymouth, Devon.—41, Bedford-st. (S), and 9 and 10, East-st. (S), area 5,300 ft., f., y.r. 450*l.*	12,500
6, The Barbican, f., y.r. 45*l.*	775

By FULLER, MOON, & FULLER (at Croydon).

Croydon.—100, Church-st. (S), f., y.r. 65*l.*	1,300
Grant-rd.—A plot of freehold land	370
Wallington.—1 and 2, Croham Hurst Villas, f., y.r. 61*l.* 18s.	1,400
Stafford-rd., Frank and Rock Villas, f., y.r. 54*l.*	

November 14.—By G. B. HILLIARD & SON (at Chelmsford).

Blackmore, Essex.—Church-st., Manor House, f., y.r. 14*l.*	290
Chelmsford-rd., three freehold cottages, y.r. 25*l.* 6s.	260
Stock, Essex.—Main-rd., Ivy Bank, f., y.r. 16*l.*	455
Main-rd., two freehold tenements, y.r. 8*l.* 5s.	155

November 15.—By GRAIN, MOVES, & WISBEY (at Cambridge).

Shepreth, Cambs.—A freehold mineral estate, 38 a. 0 r. 21 p.	1,950

November 17.—By FURBER, PRICE, & FURBER.

Notting Hill.—124, Portobello-rd. (S), y.r. 40*l.*; also i.g.r.'s. 35*l.* 10s., u.t. 41 yrs., g.r. 12s.	1,400
Holloway.—18, Hungerford-rd., u.t. 39½ yrs., g.r. 8*l.* 8s., y.r. 50*l.*	500

By HENRY HOLMES & Co.

Marylebone.—9, Great Marylebone-st. (S), u.t. 51 yrs., g.r. 36*l.*, y.r. 210*l.*	2,700
78, Great Titchfield-st. (S), u.t. 27 yrs., g.r. 20*l.*, y.r. 170*l.*	1,600
31, Ridinghouse-st. (S), u.t. 21 yrs., g.r. 28*l.*, y.r. 85*l.*	450
7, South-st. (S), u.t. 21 yrs., g.r. 34*l.*, w.r. 149*l.* 10s.	700

By HUNTER & HUNTER.

High Holborn.—No. 131 (S), u.t. 22½ yrs., g.r. 30*l.*, y.r. 150*l.*	1,650
Regent's Park.—100 and 102, Osnaburg-st. (S), u.t. 20½ yrs., g.r. 3*l.*, p.	595
70 and 72, Robert-st. (S), u.t. 20½ yrs., g.r. 2*l.*, y.r. 72*l.*	530
Dulwich.—89A, Underhill-rd., u.t. 96 yrs., g.r. 8*l.* 10s., e.r. 50*l.*	350

By HAMPTON & SONS.

Turner's Hill, Sussex.—Mantlemas, with carpenter's shop, six cottages and orchard, area about 3 acres, f. and c., w.r. 87*l.* 2s.	2,200

November 18.—By DAVID BURNETT & Co.

Kensington.—48, Elm Park-gdns., u.t. 72 yrs., g.r. &c., 5*l.*, p.	2,675
Tottenham.—86, High Cross-rd., f., p.	575
Camberwell.—13 and 17, Myatt-rd., u.t. 59½ yrs., g.r. 9*l.*, w.r. 67*l.* 12s.	500

By DEBENHAM, TEWSON, & Co.

Highgate.—Hampstead-lane, Park Villa, area ¾ acre, f., p.	3,500
Balham.—Balham Hill, f.g.r. 95*l.*, reversion in 28¾ yrs.	3,400
Clapham Common.—30, 31, and 32, North Side, area 1 a. 2 r. 29 p., f., y.r. 311*l.*	5,250
33, North Side, f., y.r. 87*l.*	1,700
Willesden.—Willesden-lane, f.g.r. 21*l.*, reversion in 45 yrs.	900
282, Willesden-la., area 1 r. 7 p., f., y.r. 95*l.*	1,500

By C. W. DAVIES & SON.

City-rd.—No. 289, u.t. 32½ yrs., g.r. 15*l.*, e.r. 80*l.*	395
Walthamstow.—28, 30, 32, and 34, Chelmsford-rd., f., w.r. 104*l.*	1,020

By J. W. MORLEY.

Barnes.—36 and 38, Archway-st., f., w.r. 54*l.* 12s.	600
86 and 88, Archway-st. (S), f., with goodwill, p.	500
92, Archway-st., f., w.r. 23*l.* 8s.	305

By NOKES & NOKES.

Clerkenwell.—19, Claremont-sq., u.t. 9½ yrs., g.r. 33*l.*, w.r. 102*l.* 14s.	160
King's Cross.—75, Winchester-st.; 1 to 5 and 108, Tenby-pl. (houses, workshops, and stabling), u.t. 32 yrs., g.r. 30*l.*, y.r. 168*l.* 10s.	550
77, Winchester-st., and 6 to 10, Tenby-pl. (workshops, stabling, &c.), u.t. 41 yrs., g.r. 12*l.*, y.r. 167*l.* 4s.	580

By ERNEST OWERS.

Hoxton.—17, Harman-st., u.t. 40 yrs., g.r. 6*l.*, y.r. 56*l.*	610
Hampstead.—27, Denning-rd., f., y.r. 70*l.*	1,050
31, Belsize-rd., u.t. 42 yrs., g.r. 10*l.*, e.r. 75*l.*	665
Willesden.—High-rd., corner shop plot of land, f.	190

By ALFRED RICHARDS.

Attleborough, Norfolk.—Freehold gasworks (as a going concern)	1,825

By PROTHEROE & MORRIS (at Stratford).

West Ham.—18 and 20, Aldworth-rd., u.t. 89 yrs., g.r. 8*l.*, w.r. 44*l.* 4s.	360
63, Vernon-rd., u.t. 89 yrs., g.r. 12*l.*, w.r. 23*l.* 8s.	190
Stratford.—33, 35, and 37, Tavistock-rd., f., w.r. 70*l.* 4s.	710
37 to 43 (odd), Holness-rd., f., w.r. 93*l.* 12s.	950
Forest Gate.—113 to 123 (odd), Ramsay-rd., f., w.r. 119*l.* 12s.	1,160

November 19.—By W. A. BLAKEMORE.

Pimlico.—87, Tachbrook-st., u.t. 26 yrs., g.r. 8*l.*, y.r. 60*l.*	500

58 and 60, Hanover-st., u.t. 22 yrs., g.r. 14*l.* 14s., y.r. 100*l.* £600
Kilburn.—Maygrove-rd., f.g.r.'s 56*l.*, reversion in 67½ yrs. 1,395
Iverson-rd., f.g.r. 8*l.* 8s., reversion in 67½ yrs. 205
Hammersmith.—28, Margravine-rd. (shop and premises, with off-licence), u.t. 80 yrs., g.r. 7*l.*, y.r. 70*l.* 830

By Foster & Cranfield.

Stratford.—Pitchford-st., f.g.r.'s 164*l.* 10s., reversion in 84 yrs. 3,660
Leyton.—Millais-rd., f.g.r.'s 120*l.*, reversion in 79 yrs. 2,580
Hammersmith.—Masborough-rd., f.g.r. 16*l.*, reversion in 55, 56, and 60 yrs. 400
Kilburn.—Douglas-rd., f.g.r. 39*l.*, reversion in 84 yrs. 900
Canning Town.—Dale-rd., f.g.r.'s 139*l.* 8s., reversion in 83 yrs. 2,910
Camberwell.—5 to 43 (odd), Comberton-rd., u.t. 70¼ yrs., g.r. 90*l.*, y.r. 705*l.* 4,850
Kentish Town.—Malden-rd., f.g.r.'s 97 *l.* 13s. 4d., reversion in 38 yrs. 4,425
Wandsworth.—Earlsfield-rd., f.g.r.'s 146*l.*, reversion in 84 yrs. 3,285
Putney.—46 to 54 (even), Schubert-rd., u.t. 81 yrs., g.r. 40*l.*, y.r. 202*l.* 1,625

By Frank Jolly & Co.

Clapton.—101, Downs-rd., f., p. 1,500
Limehouse.—34, East India-rd., u.t. 43 yrs., g.r. 4*l.* 10s., y.r. 42*l.* 330

By Wagstaff & Sons.

Whitechapel.—132 and 134, Bedford-st., and 3 and 4, Cannon-place, f., w.r. 145*l.* 12s. 2,070

By Windrum & Cleave.

Spitalfields.—273, 275, and 277, Brick-lane (shops and workshops in rear), u.t. 10 yrs., g.r. 52*l.*, w.r. 200*l.* 4s. 320
Limehouse.—19, West India Dock-rd. (S.), u.t. 28 yrs., g.r. 5*l.*, e.r. 50*l* 300

By Percy H. Clarke (at Wimbledon).

Wimbledon.—Victoria-cres., &c., a corner building site, area 5,000 ft., f., p. 1,500

By T. Woods (at Richmond).

Twickenham.—Crown-rd., eight freehold building sites (in lots) 1,390
Mortlake.—Trehern-ter., f.g.r.'s 23*l.* 10s., reversion in 79 yrs. 530
Treherr-rd., f.g.r.'s 8*l.*, reversion in 79 yrs. 170
Wolsey-ter., f.g.r.'s 25*l.*, reversion in 70 yrs. 515

By W. Daw & Son (at Pwllheli).

Llanarmon, &c., Carnarvon.—The Glynllifon Estate (outlying portions), 596 a. 2 r. 25 p., f. n numerous lots) 11,785

November 20.—By Farebrother, Ellis, & Co.

Hyde Park.—6, Clifton-pl., u.t. 34½ yrs., g.r. 20*l.*, p. 2,425
Camden Town.—178, High-st. (S.), f., y.r. 40*l.* .. 1,450
Kingston-on-Thames, Surrey.—51, High-st., f., y.r. 70*l.* 1,500

By Linnett & Lane.

Willesden.—32 and 34, Cobbold-rd., u.t. 99 yrs., g.r. 10*l.*, w.r. 78*l.* 505
Sydenham.—324, Sydenham-rd. (S.), u.t. 67 yrs., g.r. 11*l.*, y.r. 42*l.* 330

By Newbon, Edwards, & Shephard.

Notting Hill.—121, Elgin-cres., u.t. 37 yrs., g.r., &c., 10*l.*, e.r. 50*l.* 345
Stroud Green.—17, Oakfield-rd., u.t. 74 yrs., g.r. 8*l.* 8s., y.r. 50*l.* 530
83 and 117, Fiorence-rd., u.t. 76 yrs., g.r. 14*l.*, y.r. 90*l.* 350
Finsbury Park.—168 and 170, Blackstock-rd. (S.), u.t. 68 yrs., g.r. 24*l.*, e.r. 120*l.*, with goodwill 1,200
Canonbury.—42, Compton-rd., u.t. 40½ yrs., g.r. nil, y.r. 48*l.* 525
Kingsland.—Canal-rd., f.g.r.'s 42*l.*, u.t. 16 yrs., g.r. 13*l.* 5s. 510
Stoke Newington.—24 to 29, Mildmay-st., u.t. 49 yrs., g.r. 25*l.* 4s., y.r. 157*l.* 230
Hackney.—243 and 247, Dalston-lane, u.t. 36 yrs., g.r. 12*l.* 5s., y.r. 84*l.* 1,585
Peckham.—68, Gordon-rd. (S), u.t. 63 yrs., g.r. 5*l.*, w.r. 26*l.* 700

By Stimson & Sons.

Peckham.—3 to 21, Ledbury-st., u.t. 59 yrs., g.r. 64*l.*, w.r. 347*l.* 2s. 3,565
Clapham.—120, Larkhall-lane, and 100 and 102, Clifton-st., u.t. 19½ yrs., g.r. 18*l.*, w.r. 143*l.* 515
Peckham.—68, Gordon-rd. (S), u.t. 63 yrs., g.r. 5*l.*, w.r. 26*l.* 300
Tooting.—1, Ravensbury-villas, f., y.r. 26*l.* 340
45, Tooting-gr., f., w.r. 23*l.* 8s. 225
Brixton.—60 and 64, Loughborough-pk., u.t. 20 yrs., g.r. 16*l.*, y.r. 135*l.* 625
Catford.—50 to 60 (even), Bradgate-rd., u.t. 79 yrs., g.r. 36*l.*, y.r. 178*l.* 6s. 1,395
Greenwich.—3, 5, and 7, Horseferry-rd., f., w.r. 101*l.* 8s. 885
Woolwich, Kent.—20, St. Mary-st., f., y.r. 26*l.* 400
Streatham.—14, 16, and 18, Hitherfield-rd., u.t. 91 yrs., g.r. 16*l.* 10s., y.r. 125*l.* 1,200
Pinner, Middx.—East End, three freehold cottages, y.r. 42*l.* 18s. 615

By Varley & Locking.

Stoke Newington.—39, Cowper-rd., f., y.r. 44*l.* .. 750

November 21.—By Bunch & Duke.

Kingsland-rd.—No. 471, u.t. 23 yrs., g.r. 6*l.*, w.r. 61*l.* 2s. 245
Clapton.—30, Median-rd., u.t. 55 yrs., g.r. 8*l.*, e.r. 45*l.* 375

By Harper, Walton, & Co.

Belgravia.—91, Ebury-st., u.t. 9½ yrs., g.r. 26*l.*, y.r. 100*l.* 375

By Towers, Ellis, & Co.

Hyde Park.—100A, Westbourne-ter., u.t. 35 yrs., g.r. 2*l.*, p. 1,750
Paddington.—8, Upper Westbourne-ter., u.t. 46 yrs., g.r. 8*l.*, p. 500

By Fred Varley & Son.

Dalston.—179 and 181, Dalston-lane, area one-fifth of an acre, f., y.r. 87*l.* 1,310

By Green & Son.

Northampton.—St. James'-rd., freehold boot and shoe factory, area 22,880 ft., p. 5,900
Barkingside, Essex.—1 to 10, Alpha-cottages; 1 to 10, Vaughan-cottages; 2 to 8, Omega-cottages; also Juke's Villa, f., w.r. 432*l.* 18s. 5,000

***Contractions used in these lists.*—F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **p.** for possession; **e.r.** for estimated rental; **w.r.** for weekly rental; **q.r.** for quarterly rental; **y.r.** for yearly rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **av.** for avenue; **gdns.** for gardens; **yd.** for yard; **gr.** for grove; **h.h.** for beer-house; **p.h.** for public-house; **o.** for offices; **s.** for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Hard Stocks	£ 1	s. 13	d. 0	per 1,000 alongside, in river.		
Rough Stocks and Grizzles	1	10	0	"	"	"
Facing Stocks	2	12	0	"	"	"
Shippers	2	5	0	"	"	"
Flettons	1	8	0	"	at railway depôt	
Red Wire Cuts	1	12	0	"	"	"
Best Fareham Red	3	12	0	"	"	"
Best Red Pressed Ruabon Facing	3		0	"	"	"
Best Blue Pressed Staffordshire	4	5	0	"	"	"
Do., Bullnose	4	11	0	"	"	"
Best Stourbridge Fire Bricks	4	8	0	"	"	"
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	13	0	0	"	"	"
Headers	12	0	0	"	"	"
Quoins, Bullnose, and Flats	17	0	0	"	"	"
Double Stretchers	19	0	0	"	"	"
Double Headers	16	0	0	"	"	"
One Side and two Ends	19	0	0	"	"	"
Two Sides and one End	20	0	0	"	"	"
Splays, Chamfered, Squints	20	0	0	"	"	"
Best Dipped Salt Glazed Stretchers and Headers	12	0	0	"	"	"
Quoins, Bullnose, and Flats	14	0	0	"	"	"
Double Stretchers	15	0	0	"	"	"
Double Headers	14	0	0	"	"	"
One Side and two Ends	15	0	0	"	"	"
Two Sides and one End	15	0	0	"	"	"
Splays, Chamfered, Squints	14	0	0	"	"	"
Seconds Quality						
White and Dipped Salt Glazed	8	0	0	"	less than best.	
Thames and Pit Sand			7	0	per yard, delivered.	
Thames Ballast			6	0	"	"
Best Portland Cement			31	0	per ton, delivered.	
Best Ground Blue Lias Lime			22	0	"	"

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	10s. 6d. per yard, delivered.
Stourbridge Fire-clay	in sacks, 27s. 6d. per ton at rly. dpt

STONE

Ancaster in blocks	£ 1	s. 11	d.	per ft. cube, deld. rly. depot	
Bath "	1	7		"	"
Farleigh Down Bath	1	8		"	"
Beer in blocks	1	6		"	"
Grinshill "	1	10		"	"
Brown Portland in blocks	2	2		"	"
Darley Dale in blocks	2	4		"	"
Red Corsehill "	2	5		"	"
Closeburn Red Freestone	2	0		"	"
Red Mansfield "	2	4		"	"
YORK STONE—*Robin Hood Quality.*					
Scappled random blocks	2	10		"	"
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3		per foot super.	"
6 in. Rubbed two sides Ditto, Ditto	2	6		"	"
3 in. Sawn two sides slabs (random sizes)	0	11½		"	"
2 in. to 2½ in. Sawn one side slabs (random sizes)	0	7½		"	"
1½ in. to 2 in. ditto, ditto	0	6		"	"
BEST HARD YORK—					
Scappled random blocks	3	0		per ft. cube	"
6 in. sawn two sides, landings to size (under 40 ft. sup.)	2	8		per ft. super.	"
6 in. Rubbed two sides Ditto				"	"
3 in. sawn two sides slabs (random sizes)	1	2		"	"
2 in. self-faced random flags	0	5		"	"
Hopton Wood (Hard Bed) in blocks	2	3		per ft. cube. deld. rly. depôt.	
" " " 6 in. sawn both sides landings	2	7		per ft. super. deld. rly. depôt.	
" " " 3 in. do.	1	2½		"	"

SLATES.

in.	in.	£	s.	d.			
20 × 10	best blue Bangor	13	2	6	per 1000 of 1200 at rly. dep		
20 × 12	" " "	13	17	6	"	"	
20 × 10	best seconds "	12	15	0	"	"	
20 × 12	" " "	13	10	0	"	"	
16 × 8	best "	7	0	0	"	"	
20 × 10	best blue Portmadoc	12	5	0	"	"	
16 × 8	best blue Portmadoc	6	0	0	"	"	
20 × 10	best Eureka unfading green	15	0	0	"	"	
20 × 12	" "	16	10	0	"	"	
18 × 10	" "	11	10	0	"	"	
16 × 8	" "	8	7	6	"	"	
20 × 10	permanent green	10	10	0	"	"	
18 × 10	" "	9	0	0	"	"	
16 × 8	" "	6	5	0	"	"	

PRICES CURRENT (*Continued*).

TILES.

Best plain red roofing tiles	s. 42	d. 0	per 1,000, at	rly. depôt.
Hip and valley tiles	3	7	per doz.	" "
Best Broseley tiles	50	0	per 1,000	" "
Do. Ornamental tiles	52	6	"	" "
Hip and valley tiles	4	0	per doz.	" "
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000	" "
Do. ornamental Do.	60	0	"	" "
Hip tiles	4	0	per doz.	" "
Valley tiles	3		"	" "
Best Red or Mottled Staffordshire Do. (Peakes)	51	9	per 1,000	" "
Do. Ornamental Do.	54	6	"	" "
Hip tiles	4	1	per doz.	" "
Valley tiles	3	8	"	" "
Best "Rosemary" brand plain tiles	45	0	per 1,000	" "
Do. Ornamental Do.	50	0	"	" "
Hip tiles	4	0	per doz.	" "
Valley tiles	3	8	"	" "

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15	10	0	16	10	0
Deals: best 3 by 9	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 3 in. by 7 in. and 3 in.	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	"	"	"
2 in. by 4 in. and 2 in. by 6 in.	9	0	0	9	10	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	"		
Fir timber: Best middling Dantzig or Memel (average specification)	At per load of 50 ft. 4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	15	0	3	0	0
Pitch-pine timber (30 ft. average)	3	5		3	15	0

JOINERS' WOOD.

	At per standard.					
White Sea: First yellow deals, 3 in. by 11 in.	23	0	0	24	0	0
3 in. by 9 in.	21	0	0	22	10	0
Battens, 2½ in. and 3 in. by 7 in.	17	0	0	18	10	0
Second yellow deals, 3 in. by 11 in.	18	10	0	20	0	0
" " 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	15	10	0	16	10	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	12	10	0
Petersburg: first yellow deals, 3 in. by 11in.	21	0	0	22	10	0
Do. 3 in. by 9 in.	18	0	0	19	10	0
Battens	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens	11	10	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	10	0	14	0	0
Do. 3 in. by 9 in.	13	0	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14	10	0	15	10	0
" " 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals 3 in. by 11 in.	13	10	0	14	10	0
" " " 3 in. by 9 in.	12	10	0	13	10	0
" " " battens	9	10	0	10	10	0
Pitch-pine: deals	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	33	0	0	upwards.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Yellow Pine Oddments	20	0	0	22	0	0
Kauri Pine—Planks, per ft. cube	0	3	6	0	4	6
Dantzig and Stettin Oak Logs— Large, per ft. cube	0	2	6	0	3	6
Small " "	0	2	3	0	2	6
Wainscot Oak Logs, per ft. cube	0	5	0	0	5	
Dry Wainscot Oak, per ft. sup. as inch	0	0	7	0	0	8
¾ in. do. do.	0	0	6½	.	.	.
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	16	10	0	20	0	0
American Whitewood Planks— Per ft. cube	0	4	0	.	.	.

Prepared Flooring—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	1	6
1 in. by 7 in. white, planed and shot	0	11	6	0	15	6
1 in. by 7 in. white, planed and matched	0	12	0	0	14	0
1¼ in. by 7 in. white, planed and matched	0	14	6	0	16	6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0	11	0	0	13	6
1 in. by 7 in. do. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do. do.	0	11	6	0	13	6

6-in. at 6d. to 9d. per square less than 7-in.

[*See also page* 515.

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
Designs for University Buildings, Cape of Good Hope	Agnt.-Gen. for Cape of Good Hope	400*l.*, 200*l.*, 100*l.*	Jan. 31

CONTRACTS.

Nature of Work or Materials.	By whom Advertised	Forms of Tender, &c., Supplied by	Tenders to be delivered
House, Stabling, &c., near Wearhead, Co. Durham		Clark & Moscrop, Architects, Durham	Dec. 2
Schools, Exmouth-road, Stoke	Devonport School Board	J. P. Goldsmith, School Board Offices, Devonport	do.
Two Cottages, &c., Ythan Lodge, Fotheran		Wilsone & Duffus, Advocates, Aberdeen	do.
Schools, Southchurch Hall	Southend-on-Sea School Board	Buries & Harris, Architects, Southend-on-Sea	do.
Cottages	Strabane (Ireland) R.D.C.	J. R. Sharkie, Council Offices, Strabane	do.
Shelter, The Esplanade	Bangor (Ireland) U.D.C.	E. L. Woods, Civil Engineer, Town Hall, Bangor, Co. Down	do.
Shed, &c.	Barkisland (Yorks) U.D.C.	R. Clements, Surveyor, Council Offices, Barkisland	do.
Additions, &c., to Station, Melksham, Wilts	Great Western Railway	G. K. Mills, Paddington Station, W.	do.
House and Office, Maidenhead	do.	do.	do.
Footbridges, Whitland and Tavistock	do.	do.	do.
Stables, near West Ealing, Middlesex	do.	do.	do.
Stabling & Coach House, Dynevor Arms, Tyrphil, Wales	do.	do.	do.
Business Premises, Broad-street		T. Rolerick, Architect, Merthyr Tydfil	Dec. 3
Wall, &c., Cannon-street	Sheerness Economical Soc., Ltd.	J. H. Burrows, 32, High-street, Sheerness	do.
Additions, &c., to Business Premises, Newcastle-on-T.	Wellingborough U.D.C.	J. T. Parker, 39, Church street, Wellingborough	do.
Service Reservoir, Northend Woods	N. E. Railway Company	W. Bell, Architect, Central Station, Newcastle	do.
Telescopic Gasholder	Great Marlow Water Co., Ltd	W. V. Graham, Civil Engineer, 5, Queen Anne's-gate, S.W.	do.
Cast-iron Pipes, and Laying, Plas Dulyn	Yeovil Town Council	H. B. Batten, Municipal Buildings, Yeovil	do.
Water Mains, &c.	Llandudno U.D.C.	E. P. Stephenson, Engineer, Town Hall, Llandudno	Dec. 4
Cottages, Treeton, near Rotherham	do.	do.	do.
*Banding and Strengthening Base of Chimney Shaft		T. A. Brightmore, Treeton, Rotherham	do.
Additions to University College, Sheffield	Islington Guardians	Steward at Infirmary, Highgate Hill, N.	Dec. 5
*Construction of Sewers, &c.		Gibbs & Flockton, Architects, 15, St. James'-row, Sheffield	do.
Additions to Workhouse	Corporation of London	Engineer to the Corporation, Guildhall, E.C.	do.
Alterations to Wesleyan Chapel, Llansawel, Wales	Colchester Guardians	Gooley & Cressall, Architects, Victoria Chambers, Colchester	do.
Additions, &c., to St. Luke's Ch., Cumlestown, N.B.		D. Jenkins, Architects, Llandilo	Dec. 6
Enclosing Cemetery, Barnack, Northants		A. Clyne, Architect, 123, Union-street, Aberdeen	do.
Alterations, &c., to Chapel, Llansawel, Wales		J. S. Corby, Architect, 15, All Saints-place, Stamford	do.
Two Houses, Albert Promenade, Halifax		D. Jenkins, Architect, Llandilo	do.
Additions to Infirmary, Preston, Lancs.		L. Coates, Architect, Waterhouse-street, Halifax	do.
Cast Iron Piping (80 tons), Kyleakin, Skye		F. E. Dixon, Civil Engineer, 49, Lime-street, Preston.	do.
Schools, Sleaford, Lincs.	Governors of Carre's School	J. A. H. Mackenzie, Architect, Portree, N.B.	do.
School, Elmore Green, Bloxwich	Walsall School Board	J. Clare, Architect, Sleaford	do.
Sewers, Griffithstown	Panteg U.D.C.	H. E. Lavender, Architect, Bridge-street, Walsall	do.
*Sewering, Levelling, &c., Greenwood, &c., Road	Hornsey U.D.C.	T. P. H. Watkins, Club Chambers, Pontypool	Dec. 7
Car Sheds, &c.	Bexley Heath (Kent) U.D.C.	Engineer to the Council, Southwood-lane, Highgate, N.	Dec. 8
Engine and Boiler House, &c., Uffington	Margate Town Council	T. J. Baynes, Public Hall, Bexley Heath	do.
Car Shed Extensions, Purley-road	Croydon Town Council	A. Latham, Civil Engineer, Town Hall, Margate	do.
Additions to Hospitals, Hemlington	Middlesbrough Corporation	E. Mawdesley, Town Hall, Croydon	do.
*2,000 tons of Quenast, Guernsey, or other Granite	Borough of Kingston-on-Thames	F. Baker, Civil Engineer, Municipal Buildings, Middlesbrough	Dec. 10
*Making-up, &c., Moncurry-street	Borough of Fulham	Borough Surveyor, Clatterton House, Kingston-on-Thames	do.
*New Bakery in Broad-street	Sheerness Economical Society, Ld	Borough Surveyor, Town Hall, Fulham, S.W.	do.
*Superstructure of Museum, South Kensington	Commissioners of H.M. Works, &c	Society's Office, 32, High-street, Sheerness	do.
Surveyor's Materials	Northampton Corporation	Aston Webb, Architect, 10, Queen Anne's-gate, S.W.	Dec. 11
*Annual Contracts	House Committee, Guy's Hospital	A. Fidler, Borough Surveyor, Northampton	do.
*Blacksmith's Shop, &c., Ashlone-rd., Putney Embnkmt	Wandsworth Borough Council	The Superintendent, House Committee, Guy's Hospital	Dec. 13
*Making-up Hadbury, &c., Roads	Tottenham U.D.C.	Surveyor's Offices, 41, High-street, Wandsworth, S.W.	Dec. 15
*Ward Block, Administrative Block, &c.	Maldon Joint Hospital Board	Engineer to the Council, 712, High-road, Tottenham, N.	Dec. 16
Electrical Plant	Clacton-on-Sea U.D.C.	F. M. Beaumont, Maldon, Essex	Dec. 17
*Isolation Hospital	Trowbridge & Dis. Jt. Hosp. Com	W. H. Trentham, Engineer, 39, Victoria-street, S.W.	Dec. 24
Sinking a Well, Little Escroft		J. Hugh Goodman, Town Hall Chambers, Reading	Jan. 5
Pipes and Pipe Laying	Folkingham Parish Council	W. R. Wilkinson, Burley-in-Wharfedale	No date
Thirty-six Cottages	Mountain Ash Cottage Co.	H. J. Rose, Council Offices, Folkingham	do
House, Murtle, near Aberdeen	Mr. C. Melvin	Morgan & Riford, Architects, Mountain Ash	do.
Foundations at Electricity Works, Western Shore	Southampton Corporation	Sutherland & Pirie, Architects, Aberdeen	do.
Six Cottages, West Chiltington, near Pulborough	Mr. T. F. Harris	Borough Engineer, Town Hall, Southampton	do.
Additions to Schools	Haxby (Yorks) School Board	W. R. Low, Architect, Clarence-street, Staines	do
Alterations to Shelter	Whitby U.D.C.	E. T. Felgate, Architect, 3, Stonegate, York	do.
Additions to Business Premises, James-st., Harrogate	Messrs. J. Newby & Co., Ltd.	T. R. Scott, Council Offices, Whitby	do.
		Bland & Bown, Architects, Harrogate	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Required.	Salary.	Applications to be in
*Clerk of Works	Norwood (Middlesex) School Board	3*l.* 3*s.* per week	Dec. 4
*District Road Surveyor and Sanitary Inspector	Wigmore R.D.C.	140*l.* of 150*l.*	Dec. 6
*Clerk of Works	Metropolitan Borough of Fulham	3*l.* 3*s.* per week	Dec. 8
*Architectural Assistant	Borough of Lancaster	150*l.* per annum	Dec. 12
*District Surveyor of Roads	Lancashire County Council	200*l.*, increasing to 300*l.* per annum	Dec. 13

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, — *Contracts*, pp. iv. vi. viii. & x. *Public Appointments*, xvi. & xvii.

PRICES CURRENT (*Continued*).

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders " "	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Finch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 15 0	8 5 0
Staffordshire Crown Bars, good merchant quality	8 5 0	8 15 0
Staffordshire "Marked Bars"	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price	9 5 0	9 10 0
" " galvanised	16 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.	10 0 0	- - -
" " to 24 g.	11 0 0	- - -
" " to 26 g.	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes 6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0	- - -
" " 22 g. and 24 g.	13 5 0	- - -
" " 26 g.	14 5 0	- - -
Sheet Iron, Galvanised, flat, best quality :—		
Ordinary sizes to 20 g.	16 0 0	- - -
" " 22 g. and 24 g.	16 10 0	- - -
" " 26 g.	18 0 0	- - -
Galvanised Corrugated Sheets :—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0	- - -
" " 22 g. and 24 g.	13 5 0	- - -
" " 26 g.	14 5 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	- - -
" " 22 g. and 24 g.	13 0 0	- - -
" " 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 5 0	9 15 0
(Under 3 in. usual trade extras.)		

LEAD, &c.

	Per ton in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	13 7 6	- - -
Pipe in coils	13 17 6	- - -
Soil Pipe	16 7 6	- - -
Compo Pipe	15 7 6	- - -
ZINC—Sheet—		
Vieille Montagne ton	25 0 0	- - -
Silesian "	24 10 0	- - -
COPPER—		
Strong Sheet per lb	0 0 10	- - -
Thin "	0 0 11	- - -
Copper nails "	0 0 11	- - -
BRASS—		
Strong Sheet "	0 0 9	- - -
Thin "	0 0 10	- - -
TIN—English Ingots "	0 1 3	- - -
SOLDER—Plumbers' "	0 0 6½	- - -
Tinmen's "	0 0 8½	- - -
Blowpipe "	0 0 9½	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1¾d. " "
21 oz. thirds	3¼d. " "
" fourths	2½d. " "
26 oz. thirds	4d. " "
" fourths	3¼d. " "
32 oz. thirds	5d. " "
" fourths	4¼d. " "
Fluted sheet, 15 oz.	3d. " "
" 21 "	4d. " "
Hartley's Rolled Plate	1¾d. " "
" " "	2d. " "
" " "	2½d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 2 2
" " " in drums	"	0 2 5
Boiled " " in pipes or barrels	"	0 2 4
" " " in drums	"	0 2 7
Turpentine, in barrels	"	0 3 3
" in drums	"	0 3 5
Genuine Ground English White Lead	per ton	21 0 0
Red Lead, Dry	"	20 0 0
Best Linseed Oil Putty	per cwt.	0 1 6
Stockholm Tar	per barrel	1 10 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 6
Superfine Hard-drying Oak, for Seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 18 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ACTON.—For the steel roof work of the new swimming-baths, &c., for the Acton District Council :—

Rowlingson & Co., 7, Quality-court, Chancery-lane* £244

BELFAST.—For the supply of Welsh setts (800 tons), for the Harbour Commissioners. Mr. G. F. L. Giles, Engineer, Harbour Office, Belfast :—

	Per ton. £ s. d.
Welsh Granite Co., Ltd.	1 9 6
Kneeshaw, Lupson, & Co.	1 8 6
Brundrit & Co.*	1 8 0

BROMSGROVE.—For Barnsley Hall Asylum, for Worcestershire County Council. Mr. G. T. Hine, architect, 35, Parliament-street, S.W. :—

Fincher & Co.	£201,450	Kerridge & Shaw	£175,922
Davey, Ltd.	198,502	Barnsley & Sons	174,776
Howe & Co.	194,630	Lee & Son	173,659
Kellett & Sons, Ltd.	191,702	T. Rowbotham	171,210
McCormick & Sons	190,678	Gowing & Ingram	170,468
Stephens, Bastow, & Co.	190,302	Lowe & Sons	168,132
Guest & Son	188,725	G. G. Hill	167,100
D. W. Davies	184,097	W. Hopkins	167,000
Parnell & Son	183,286	Crane, Ltd.	166,135
W. Walkerdene	182,856	Willcock & Co.	164,448
J. Tilt	179,909	F. L. Jones	161,958
Sapcote & Sons	179,686	J. & A. Brazier	161,700
H. Lovatt	178,949	T. Johnson	161,220
J. Herbert	176,860	F. Evans	156,576
J. Dallow	176,360	Smith & Pitts	154,880
		Whitehouse & Sons, Birmingham*	151,475

CHELMSFORD.—For a cottage on the Mildmay-road. Mr. Rd. Mawhood, architect, Chelmsford :—

W. Fincham	£408	J. Gowers	£470
W. Samms	420	F. Weight, Springfield*	385

CREWE.—For additions to isolation hospital, for the Town Council. Mr. G. E. Bolshaw, architect, 189, Lord-street, Southport :—

W. J. Freeman	£2,980	Micklewright & Sons	£2,460 17 9
H. Fairclough	2,918	Allison & Sons	2,358
E. G. Smith	2,779 9 11	Jas. Herbert	2,350
Hamilton & Son	2,674	A. E. Lee	2,310
Jno. Morrey	2,585 4	Garner & Son, Crewe*	2,296 3 1
Jno. Gethin	2,501		
J. Williams	2,493 17 10		

[Architect's estimate, £2,350.]

HATFIELD.—For new offices for County Surveyor's department, at Hatfield. Mr. Urban A. Smith, C.E., 41, Parliament-street, S.W. :—

S. Worboys	£2,583 15 6	Shrouder & Matthews	£2,181 13 7
Avis & Brooker	2,557	C. Brightman	2,171
Miskin & Son	2,475	Dupont & Co.	2,163 4 8
Spiers & Son	2,435	F. Newton	2,158
J. T. Wingrove	2,376 1 9	General Builders, Ltd.	2,099
Willmott & Sons	2,332	Ernest West	2,072
Hampton Bros.	2,290	Gough & Co.	2,047
Misselwhite & Sons	2,284 13	R. L. Tonge	1,998
J. Gutteridge	2,280 2 9	Ekins & Co., Hertford*	1,995
Geo. Wiggs	2,261		

HIGH EASTER.—For a house at Stagdons Cross. Mr. Rd. Mawhood, architect, Chelmsford :—

J. Gowers, Chelmsford* £1,600

LONDON.—For machinery for overhaul and repair of sludge vessels, Crossness outfall, for the London County Council :—

(a) Two Sliding and Screw-cutting Lathes.

Hetherington & Sons, Ltd.	£342	Smith & Coventry, Ltd.	£366
Muir & Co., Ltd.	313	Tangye Tool and Electric Co., Ltd.*	227 10
Hulse & Co., Ltd.	295		
Kendall & Gent	274		

(b) Horizontal Boring Machine (48 in. by 16 in.).

Kendall & Gent	£397	Hulse & Co., Ltd.*	£361
Hetherington & Sons, Ltd	392	Muir & Co., Ltd.	330 10

LONDON.—For switchboards for sub-stations in connexion with the reconstruction, for electrical traction, of Tooting to Westminster, &c., tramways, for the London County Council :—

Heaton & Smith, Ltd., Salford	£6,044 3 0
The Holland House Electrical Manufacturing Co., Ltd., Glasgow	5,458 11 0
The British Thomson-Houston Co., Ltd., Rugby	4,312 15 0
Ferranti, Ltd., Hollinwood, Lancaster	4,108 17 0
	2,985 8 0
The Edison and Swan United Electric Light Co., Ltd., London	2,710 6 6
	3,340 2 6
Mather & Platt, Ltd., Manchester	3,245 3 0
W. J. Fryer & Co., Harrow-road, W.	3,094 5 0
The Electrical Transmission Co., Hammersmith	3,216 4 0
Johnson & Phillips, Old Charlton, Kent	3,087 17 0
Siemens Bros. & Co., Ltd., Westminster	3,071 0 0
Bertram Thomas, Manchester	2,772 0 0
The Electric Construction Co., Ltd., Wolverhampton	2,754 0 0
The British Westinghouse Electric and Manufacturing Co., Ltd., London	2,599 9 0
Kelvin & James White, Ltd., Glasgow	2,582 18 0
The Consolidated Telephone Construction and Manufacturing Co., Ltd., London	2,500 0 0
Cox-Walkers, Ltd., Darlington	2,459 0 0
Arnold Kramer, London	2,445 8 0
Cowans, Ltd., Manchester*	2,310 0 0
Allgemeine Elektricitäts-gesellschaft, Berlin	2,260 0 0
The Electric and Ordnance Accessories Co., Ltd. (Messrs. Vickers, Sons, & Maxim), Birmingham	2,248 0 0
J. G. Statter & Co., Birmingham*	1,604 9 0

LONDON.—For hinge forgings, Western Pumping Station, for the London County Council :—

Benjamin Goodfellow, Ltd.	£165	Simpson & Co., Ltd.	£87 15 0
Clayton, Goodfellow, & Co., Ltd.	96 2 6	Hunter & English	81 0 0
		Easton & Co., Ltd.*	80 0 0

LONDON.—For valve-grids for Abbey-mills pumping station, for the London County Council :—

Clayton, Goodfellow, & Co.* £110

MAIDENHEAD.—For making-up The Crescent and Waldeck-road and street, for the Town Council. Mr. P. Johns, C.E., Guildhall, Maidenhead :—

	Waldeck-street.	Waldeck-road.
Wimpey & Co.	£504 13 6	£90 4 0
F. Talbot	503 8 1	79 7 7
Free & Son	490 19 6	75 8 9
Mott & Sons*	424 10 3	76 8 1

[Surveyor's estimates, Waldeck-street, £460 10s. 7d.; Waldeck-road, £76 0s. 8d.]

The Crescent.

Lawrence & Thacker	£1,558 0 0
D. N. Porter	980 0 0
Free & Sons	874 3 4
Mott & Sons, Staines*	749 5 9

[Borough Surveyor's estimate, £956 0s. 8d.]

MANSFIELD.—For the execution of road-works, Rosemary-street, for the Town Council. Mr. R. F. Vallance, Borough Surveyor, Town Hall, Mansfield :—

H. Ashley	£1,352	Lane Bros.	£1,058
Fisher Bros.	1,165	H. Bennett	926 9 0
J. Greenwood	1,109	A. F. Houlton, Mansfield*	913 0 0
J. Lane	1,106 13 6		

POOLE.—For making up Alexandra-road, &c. Mr John Elford, Borough Surveyor, Poole :—

Grounds & Newton	£1,394	T. C. Rigler	£1,325
J. Saunders	1,385	G. T. Budden	1,233 12
W. P. Saunders	1,300	H. C. Buxey	1,156 14

REIGATE (Surrey).—For the erection of a residence on Wray-lane, Reigate Hill, for Mr. F. Vigers. Mr. A. Waring Venner, architect, Redhill :—

Chas. Parsons	£2,850	Alfred B. Wiles	£2,580
Joseph Waycott	2 755	A. B. Apted	2,544
Wickman & Lewis	2,712	Wm. Wickman	2,495
Rushby & Sons	2,709	E. Worssell	2,486

‡ Amended and accepted.

[*See also next page.*

ROYDON.—For the erection of a house and lodge at Roydon, Essex, for Mr. C. A. Christie, of Hoddesdon, Herts. Messrs. Newman & Newman, architects, 31, Tooley-street, London Bridge. Quantities by Messrs. Selby & Saunders, of 39, Victoria-street, Westminster, S.W. :—

	House.	Lodge, &c.
Bex	£4,680	£690
Sharpington	4,660	730
Lawrence & Son	4,494	694
Hitch	4,481	682
Holloway Bros.	4,366	673
Webster & Cannon	4,328	748
Horrocks	4,275	670
Goddard & Sons	4,196	696
Bentley	4,178	668
J. Hunt, Hoddesdon	3,958	638*

SOUTHAMPTON.—For alterations and decorative repairs to fish shop, No. 99, East-street, Southampton, for Mr. F. Letten. Messrs. Youngs & Thomas, architects, 74, Above Bar, Southampton. Quantities by the architects :—

G. Britten	£185 16	Potts & Ward	£154 18
F. Stiles	160 10	J. Dowdall*	148 9

[All of Southampton.]

SOUTHMINSTER.—For rebuilding the White Horse Hotel. Mr. Rd. Mawhood, architect, Chelmsford :—

Smith & Son	£1,445	H. Bishop, South-	
J. Rayner	1,335	minster*	£1,198

WALSALL.—For the erection of cart-sheds, stabling &c., Daw End, Rushall, for the Rural District Council Mr. F. W. Mager, C.E., Aldridge, Walsall :—

W. D. Oakley	£819 12 5	J. Holder	£661 5 0
W. H. Gibbs	775 0 0	J. Bates	652 7 0
D. Smith	752 18 0	W. H. James	600 0 0
J. Herbert	729 0 0	W. Tildesley, Portobello, Wolverhampton*	535 0 0
W. Clare	701 18 9		
J. Mallin	680 0 0		

WATFORD (Herts).—For reinstating premises in the St. Albans-road, for the Paget Prize Plate Co., Ltd. Mr. C. P. Ayres, architect, Watford. Quantities by the architect :—

R. L. Tonge	£2,597	Clark Bros.	£2,211
Swain	2,496	Murrey	2,197
Judge	2,354	Webster & Cannon	2,190
H. Brown	2,333	C. Brightman	2,168
C. Eames	2,297	Watkins	2,159
Dupont & Co.	2,296	Wiggs	2,154
G. & J. Waterman	2,274	Clifford & Gough*	2,114
Turner & Co.	2,256		

WATFORD (Herts).—For pulling down and rebuilding premises, Nos. 161 and 163, High-street, and No. 4, Water-lane, Watford, for Messrs. E. Rodwell & Co. Mr. C. P. Ayres, architect, Watford. Quantities by the architect :—

G. & J. Waterman	£2,133 0 0	C. Brightman	£1,948 0 0
Tylor & White	2,000 0 0	Watkins	1,947 0 0
C. Eames	1,990 0 0	Judge	1,928 0 0
Clifford & Gough	1,989 0 0	Wiggs	1,923 0 0
Clark Bros.	1,981 0 0	H. Brown	1,875 0 0
Webster & Cannon	1,975 0 0	Swain	1,834 15 10
		Dupont & Co.*	1,768 0 0

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's Architect :—

* *Recommended for acceptance.*

LOWER CHAPMAN-STREET (Girls').—Reversing stepped flooring in Class-room E, and altering position of doorway in connexion with same; also providing skylight in same room and a borrowed light in wall between cloakroom and hall :—

T. L. Green	£183 0	Barrett & Power	£152 0
Vigor & Co.	162 10	J. T. Robey	147 10
A. E. Symes	155 0	G. Barker	143 0
Gibb & Co.	154 0	F. & F. J. Wood*	129 0

THE "BRECKNOCK."—Special school (mentally defective) four classrooms of 20; total, 80; and enclosing, draining and tarpaving additional land :—

Simpson & Son	£4,797 0 0	Patman & Fothering-ham, Ltd.	£4,267 0 0
Dearing & Son	4,573 2 3	Gough & Co.	4,223 0 0
W. M. Dabbs	4,462 0 0	McCormick & Sons	4,178 0 0
Grover & Son	4,392 0 0	Wall & Co.	4,177 0 0
Willmott & Sons	4,388 0 0	C. Cox	4,140 0 0
Marchant & Hirst	4,338 0 0	Treasure & Son	4,018 0 0
T. L. Green	4,289 0 0	Lawrance & Sons*	3,949 0 0
Williams & Son	4,285 0 0		

TOOTING GRAVENEY.—Fitting boys' and junior mixed boys' urinals with sparge pipes, asphalting dado, &c., and providing new lavatory basins and slop sinks inside building with new waste; refitting schoolkeeper's water-closet, fixing new ventilating-pipe and connecting it to existing drain, fixing new sink in scullery, and connecting waste to gully outside :—

Maxwell Bros., Ltd.	£390	E. Triggs	£334
Lorden & Son	369	W. Hammond	300
Johnson & Co., Ltd.	363	Lathey Bros.	279
Rice & Son	362	Leney & Son*	275

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